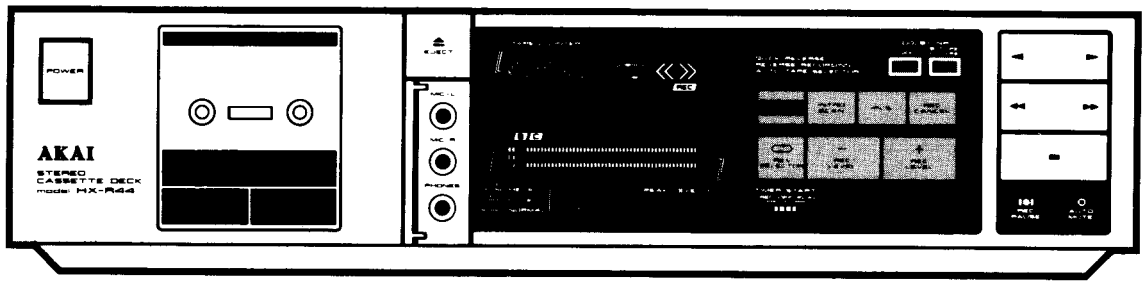
HX-R44

AKAI SERVICE MANUAL



STEREO CASSETTE DECK

MODEL **HX-R44**

ABBREVIATIONS FOR SERVICE MANUAL
MODEL HX-R44

ABBREVATION	EXPLANATION
AC	Alternating Current
ADJ	ADJustment
DC	Direct Current
FF	Fast Forward
FLD	FLuorescent Display
FREQ	FREQuency
FWD	ForWarD
GND	GrouND
IPLS	Instant Program Locating System
NR	Noise Reduction
PB	Play Back
REC	RECord
REV	REVerse
REW	REWind
SENS	SENSitivity
SW	SWitch
VR	Variable Resistor
V. REG	Voltage REGulator

STEREO CASSETTE DECK

MODEL HX-R44

SECTION 1 SERVICE MANUAL 3
SECTION 2 PARTS LIST 15

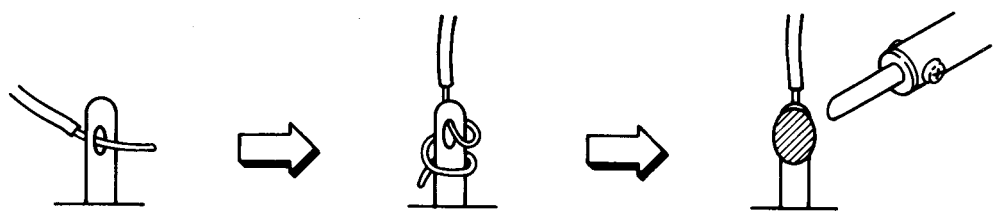
SAFETY INSTRUCTIONS

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be more than 2.2 Mohms (ground terminals, microphone jacks, headphone jacks. line-in-out jacks etc.)

PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol parts are critical for safety.
   Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation. These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.

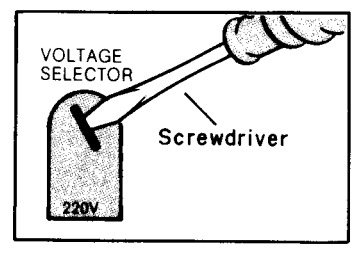


6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

VOLTAGE CONVERSION

Models for Japan, Canada, USA, Europe, UK and Australia are not equipped with this facility.
Each machine is preset at the factory according to destination, but some machines can be set to 110V, 120V, 220V or 240V as required.
If VOLTAGE CHANGE is necessary, this can be accomplished as follows:

1. Disconnect AC power cord.
2. Turn the VOLTAGE SELECTOR located on the rear panel with a screwdriver until the correct voltage is indicated.



CYCLE CONVERSION

Cycle conversion is not necessary since HX-R44 use a DC motors.

SECTION 1

SERVICE MANUAL

TABLE OF CONTENTS

I. SPECIFICATIONS **4**
II. DISMANTLING OF UNIT **5**
III. CONTROLS **6**
IV. PRINCIPAL PARTS LOCATION **7**
V. MECHANICAL ADJUSTMENT **8**
5-1 PINCH ROLLER PRESSURE MEASUREMENT 8
5-2 WINDING TORQUE MEASUREMENT IN EACH MODE 8
5-3 TAPE SPEED ADJUSTMENT 8
VI. HEAD ADJUSTMENT **9**
6-1 TAPE GUIDE ADJUSTMENT 10
6-2 REC/PB HEAD AZIMUTH ADJUSTMENT 10
6-3 HEAD HEIGHT ADJUSTMENT 10
6-4 HEAD BLOCK PROJECTION ADJUSTMENT 10
VII. ELECTRICAL ADJUSTMENT **11**
7-1 QUICK REVERSE SENSITIVITY ADJUSTMENT 11
7-2 PRE-AMP P.C BOARD ADJUSTMENT 12
VIII. DC RESISTANCE OF HEADS **14**
IX. P.C BOARD TITLES AND IDENTIFICATION NUMBERS **14**

For basic adjustments, measuring methods, and operating principles, refer to GENERAL TECHNICAL MANUAL.

I. SPECIFICATIONS

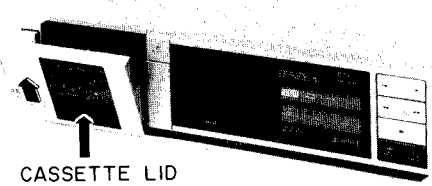
TRACK SYSTEM	4 Track 2 channel stereo system
TAPE	Philips type cassette
HEADS	Erase head x 1 HD head for REC/PB x 1
MOTORS	Electronically speed controlled DC motor for capstan drive x 1, DC motor for cam drive x 1
WOW & FLUTTER	±0.07%W. Peak (EIAJ), 0.05% (W. RMS) 0.12% (DIN)
FREQUENCY RESPONSE	Normal: 20 to 16,000 Hz ± 3 dB (EIAJ) CrO_2 : 20 to 17,000 Hz ± 3 dB (EIAJ) Metal : 20 to 18,000 Hz ± 3 dB (EIAJ)
S/N	58 dB 55 dB (EIAJ) Dolby B ON: Improves up to 5 dB at lkHz, 10 dB above 5kHz Dolby C ON: Improves up to 15 dB at 500 Hz, 20 dB at 1 kHz to 10 kHz
Distortion	0.7% (METAL) 0.6% (METAL) 0.25% (CrO_2) 0.15% (NORMAL) } (EIAJ)
INPUT	Line: 410 mV/47 kohms
OUTPUT	Line: 410 m/1 kohms
POWER REQUIREMENTS	100 V, 50/60 Hz for Japan 120V, 60 Hz for USA and Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK and Australia 110V/120V/220V/240V, 50/60 Hz switchable for other countries
DIMENSIONS	440 (W) x 105 (H) x 288 (D) mm (17.3 x 4.1 x 11.3 inches)
WEIGHT	4.5 kg (9.9 lbs)

* For improvement purposes, specifications and design are subject to change without notice.
* Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the Double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

II. DISMANTLING OF UNIT

In case of trouble, etc. necessitating dismantling, Please dismantle in the order shown in the photographs. Reassemble in reverse order.

1



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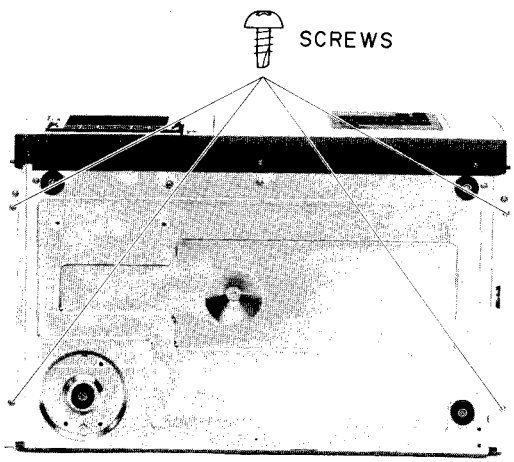

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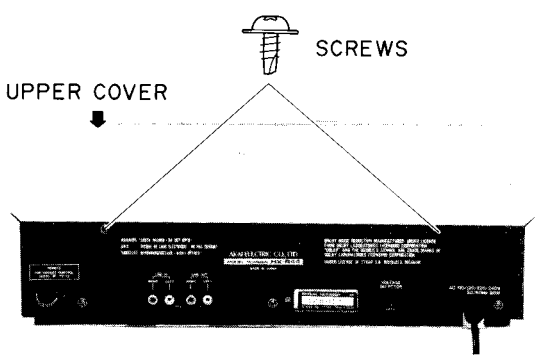

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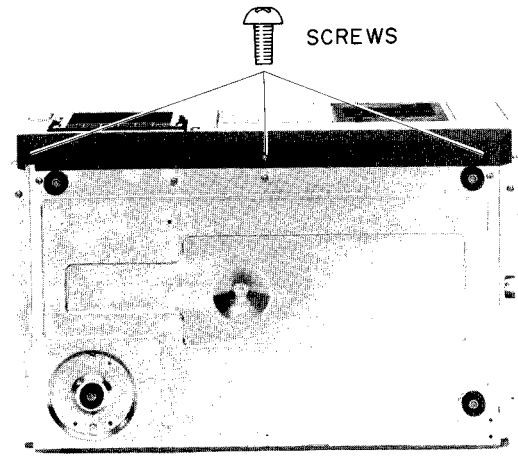

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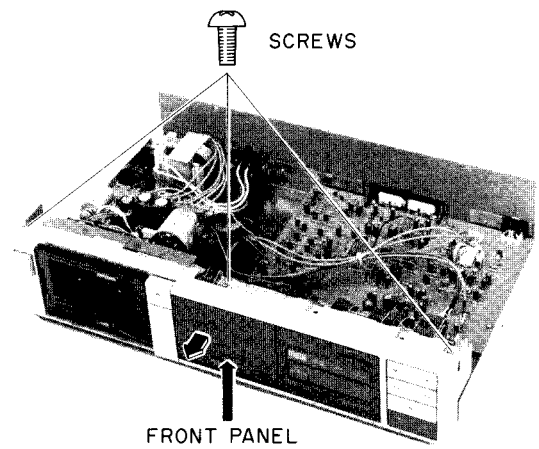

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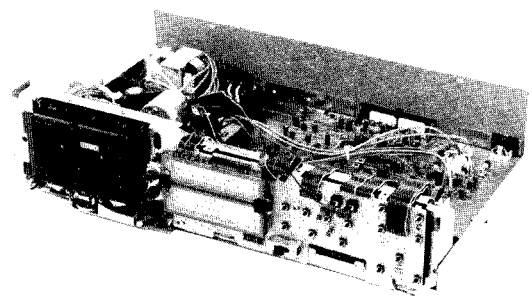


III. CONTROLS

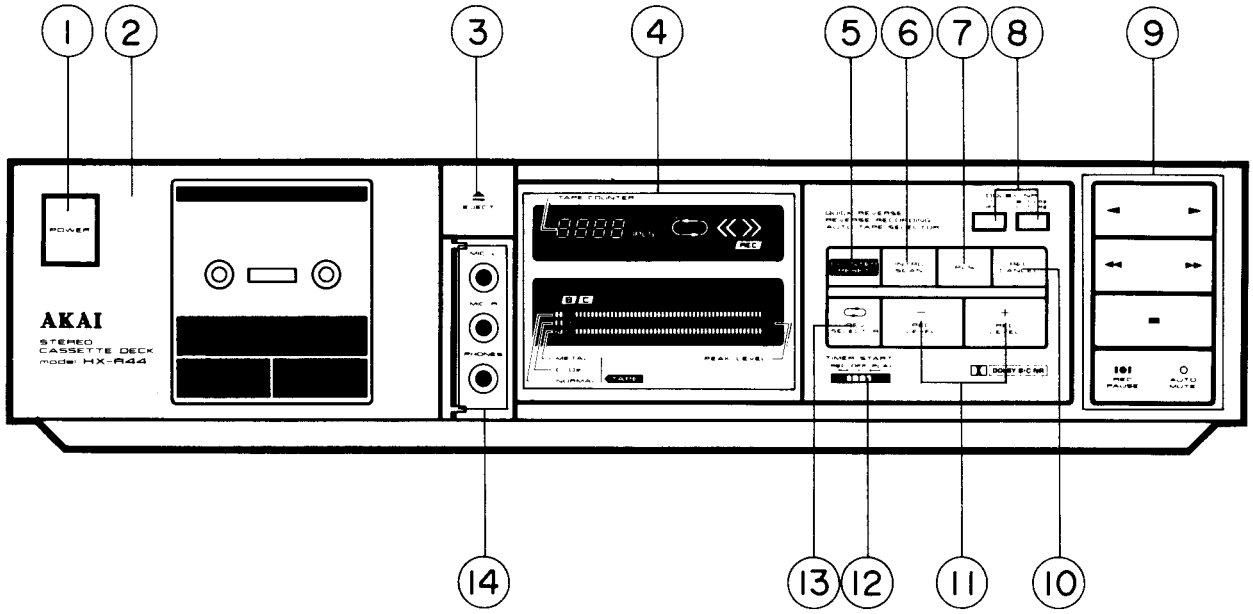


Fig. 3-1

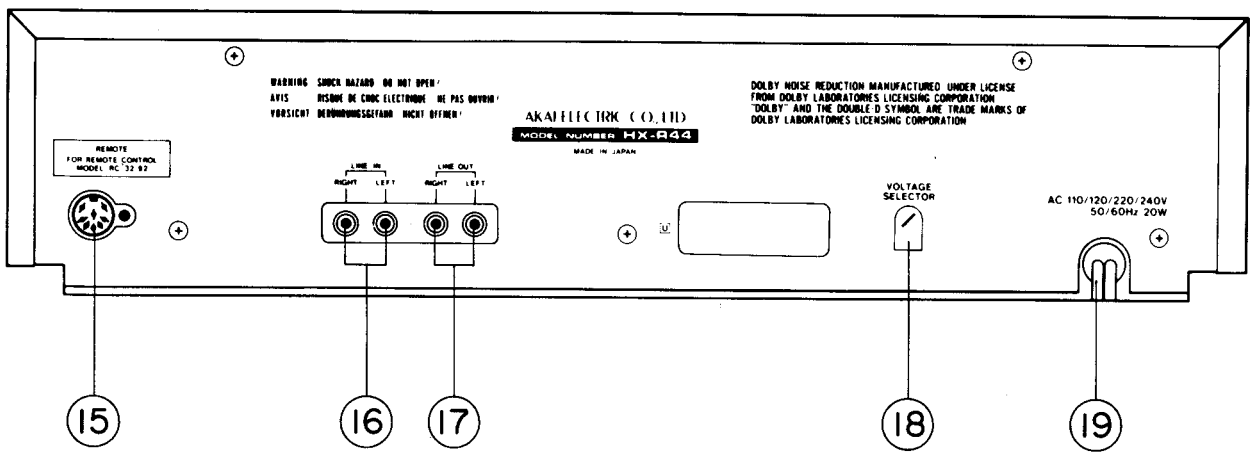


Fig. 3-2

1. POWER SWITCH
2. CASSETTE LID
3. EJECT BUTTON
4. FL DISPLAY
5. COUNTER RESET BUTTON
6. INTRO SCAN BUTTON
7. IPLS BUTTON
8. DOLBY NR SWITCH AND SELECTOR
9. OPERATION BUTTONS
10. REC CANCEL BUTTON
11. REC LEVER CONTROL
12. TIMER START SELECTOR
13. REV SELECTOR
14. CONTAINS JACKS FOR MIC L/R AND HEADPHONE
15. REMOTE CONTROL JACK
16. LINE IN JACKS
17. LINE OUT JACKS
18. VOLTAGE SELECTOR ([U] MODEL ONLY)
19. AC POWER CORD

IV. PRINCIPAL PARTS LOCATION

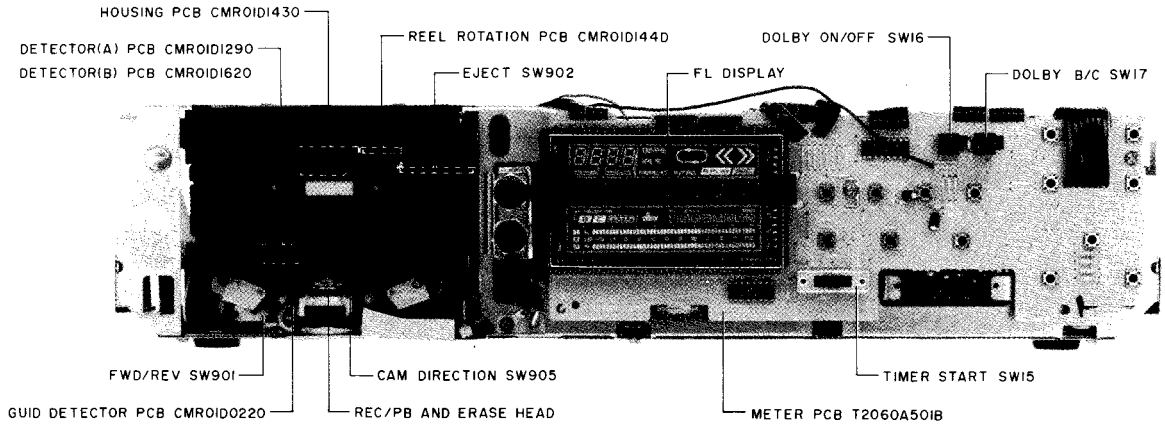


Fig. 4-1 Front View

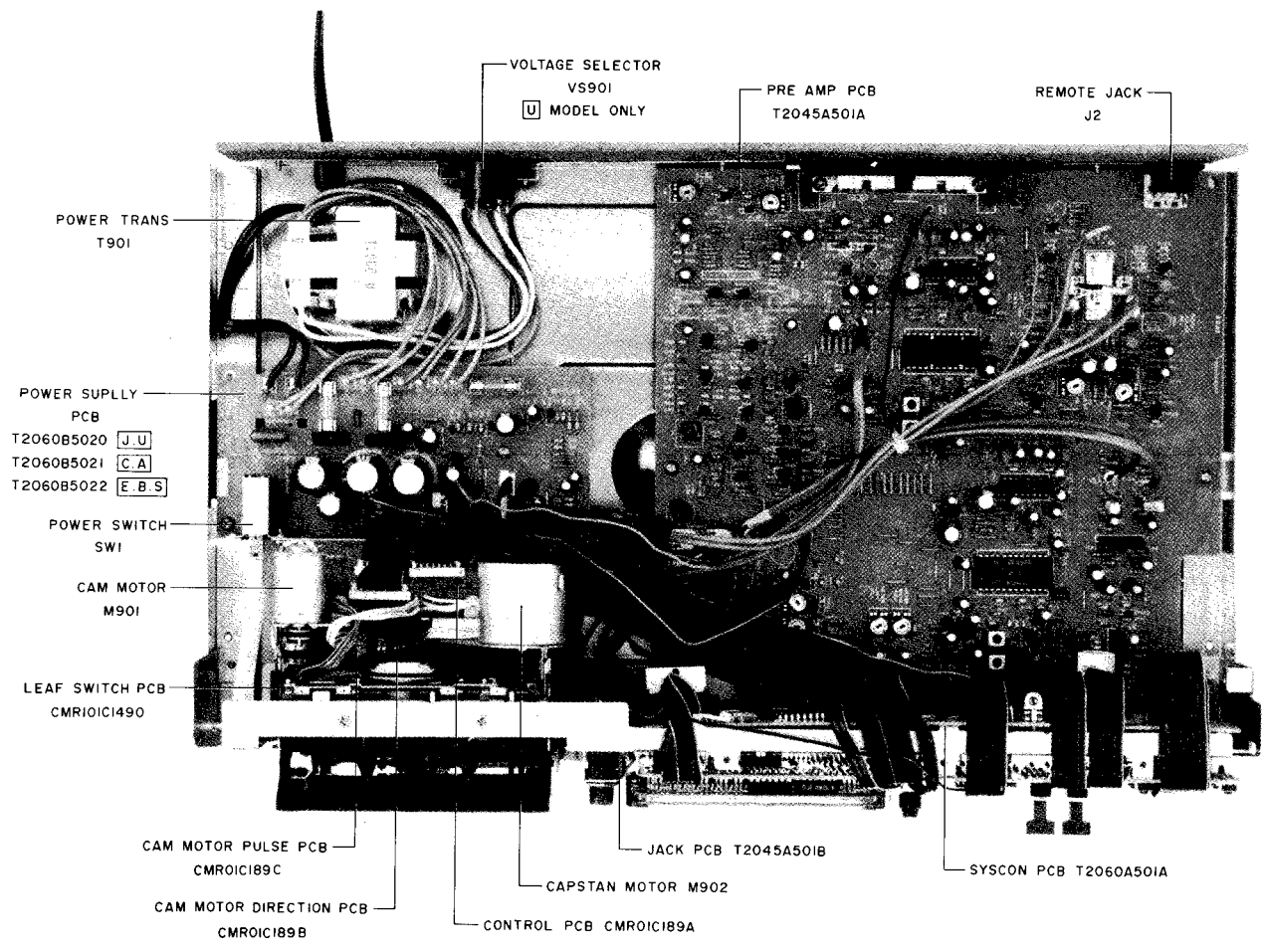


Fig. 4-2 Top view

V. MECHANICAL ADJUSTMENT

5-1 PINCH ROLLER PRESSURE MEASUREMENT (Refer to Fig. 5-1)

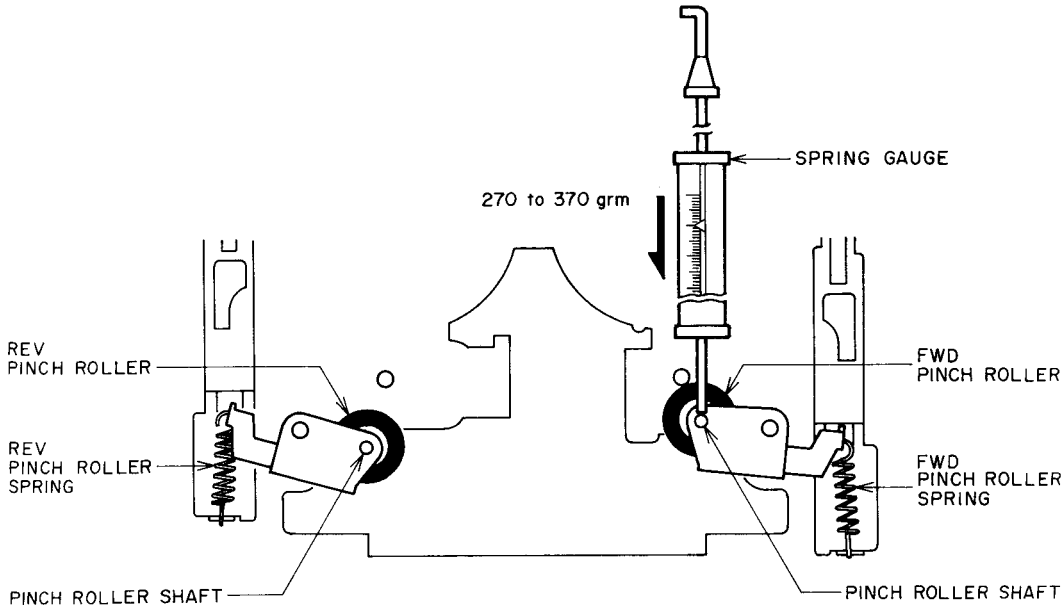


Fig. 5-1

Put in FWD PLAY Mode. Push pinch roller shaft down with the spring gauge, and push the pinch roller 1 to 2 mm away from the capstan and release slowly.
Read the spring gauge at the moment the pinch roller touches the capstan and begins to rotate. Specified contact pressure measurement is 270 to 370 grams.
If the correct measurement is not obtained, replace the pinch roller spring. Do the same for the reverse side.

5.2 WINDING TORQUE MEASUREMENT IN EACH MODE (Refer to Fig. 5-2)

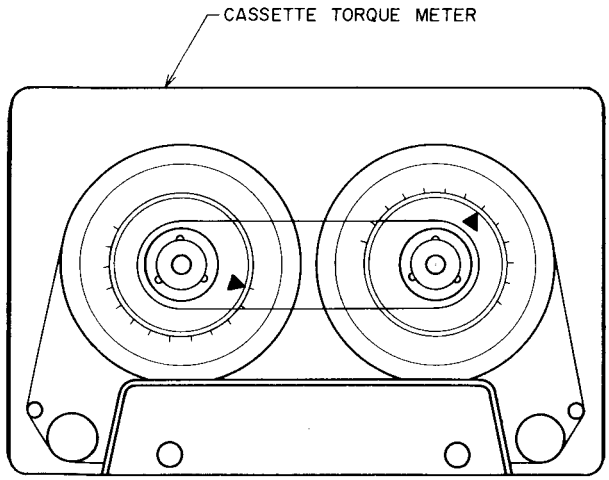


Fig. 5-2

Insert a cassette torque meter (AJ-751179) and measure in each mode.
For Fast Forward and Rewind, measure at the end of the tape when the tape has stopped running.
Forward of Reverse mode
Take up Toque: 25 to 45 g-cm
Back Tension Torque: 2 to 5 g-cm
Fast Forward or Rewind mode
Take up Torque: 70 to 150 g-cm

5-3 TAPE SPEED ADJUSTMENT (Refer to Fig. 5-3)

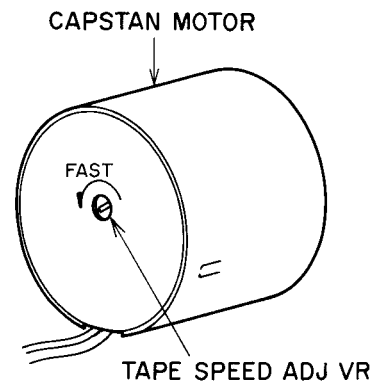


Fig. 5-3 Location of Tape Speed Adjustment Variable Resistor

Connect a frequency counter to Line Output terminal. Playback a 1,000Hz pre-recorded Test Tape (AT-750744), or 3,150 Hz pre-recorded Test Tape (AT-751263), and adjust the Tape Speed Adjustment Variable Resistor (See Fig. 5-3) to obtain a tape speed of 1,000 ± 3 Hz, or 3,150 ± 10 Hz.

VI. HEAD ADJUSTMENT

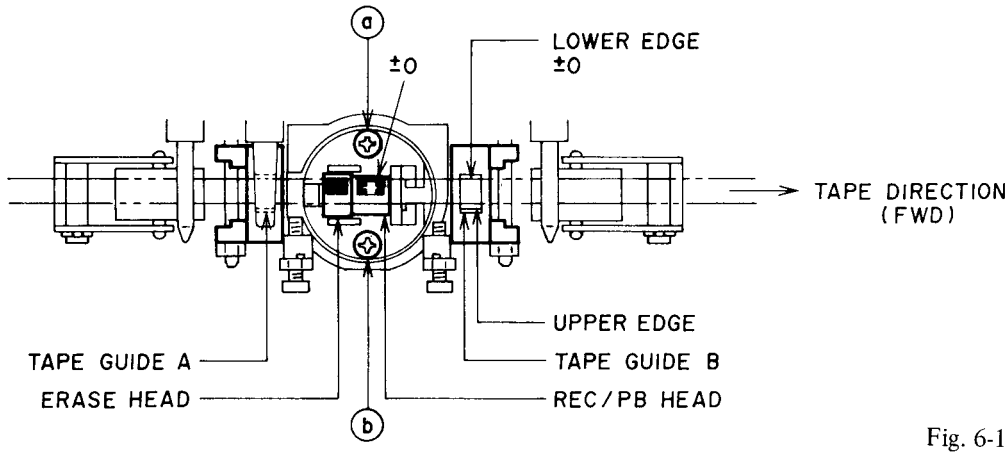


Fig. 6-1

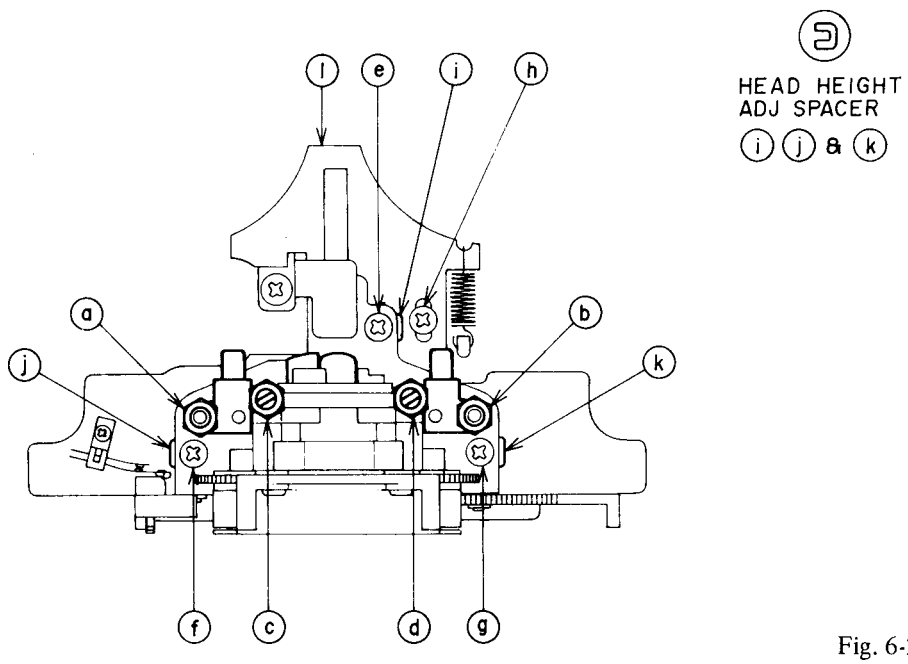


Fig. 6-2

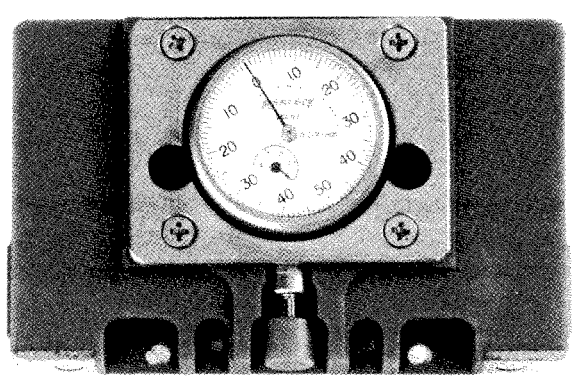


Fig. 6-3 Cassette Head Projection Gauge (TF-111CJ)

Fig. 6-4 Mirror Cassette Tape (MC-112C)

6-1 TAPE GUIDE ADJUSTMENT (Refer to Figs. 6-1, 6-2 & 6-4)

1) Use a mirror Cassette Tape (AT-751178) shown in Fig. 6-3 for better visibility of the head area, and select PLAY mode.
2) Adjust the tape guides A and B by turning the tape guide height adjustment nuts ⓐ and ⓑ in Fig. 6-2, so that the tape runs smoothly by the lower edge of both tape guides, and the tape is not hitched by those tape guides.

6-2 REC/PB HEAD AZIMUTH ADJUSTMENT

Playback a 10 kHz Head Azimuth Adjustment Tape (AT-750778) and adjust the screws ⓒ (FWD direction) and ⓓ (REV direction), so that the levels of both channels are maxima. (NOTE: Avoid turning the screws too far as other false maxima exist further away on both sides of the correct position.)

6-3 HEAD HEIGHT ADJUSTMENT

This adjustment is not necessary since HX-R44 is equipped with Roatary Head System (with Erase & REC/PB combination head). However, the confirmation of head height is necessary and it can be done as follows.

1) Confirm the azimuth in item 6-2.
2) Playback a 315 Hz (or 333 Hz) PB Level Adjustment Tape (AT-750773) in FWD Play mode, and adjust the PB level Adjuster (VR5 on Pre-Amp P.C Board) so that the LINE OUT level of left channel is –5.5 dBm. Then, check the level of the same channel in REV mode. The difference in level between FWD and REV modes should be within ±1 dBm. (–4.5 dBm to –6.5 dBm)
3) If the difference is more than ±1 dBm in item 2), adjust the tape guides A & B by turning both Tape Guide Height Adjustment screws ⓐ & ⓑ in the same direction by 1/4 turn (±0.1 mm), so that difference is within ±1 dBm.
4) The Head Height Adjustment is necessary if still the difference could not be corrected by above adjustment. It can be done by changing the Head Height Adjustment Spacers ⓘ ⓙ & ⓚ . (The thicknesses of these spacers are ⓘ = 0.45 mm, ⓙ & ⓚ = 0.3 mm).
   Loose the screws ⓔ ⓕ & ⓖ the spacer replacement.
   If the level is lower in REV mode, it means that the head is too hight, therefore replace the spacers by thinner ones. When the level is higher in REV mode, replace them by thicker ones.
   After the replacement of those spacers, do the same adjustment in items 1) and check the level of LINE OUT is –5.5 dBm ± 1 dBm.
   For the further confirmation, playback a 4 Track Head Height Adjustment Tape (1 kHz/4 Track, AT-750775). LINE OUTPUT level of both channels should be more than –8 dBm and the difference in level of both channels should be more than –8 dBm and the difference in level between FWD and REV modes should be within ±1 dBm. Otherwise do the fine adjustment in the same manners as item 3) & 4).
5) When the head replacement is necessary, loosen only the screws ⓐ & ⓑ in Fig. 6-1 for easy replacement.

6-4 HEAD BLOCK PROJECTION ADJUSTMENT (Refer to Figs. 6-2 & 6-3)

Use a cassette Head Projection Gauge (AT-751180) and select FWD or REV play mode.
Loosen the screw ⓗ and adjust Chassis Head Part ⓘ so that the gauge indication at the time is 3.2 ± 0.15 mm.
After the adjustment, apply paint-lock on the screw ⓗ .

VII. ELECTRICAL ADJUSTMENT

7-1 QUICK REVERSE SENSITIVITY ADJUSTMENT

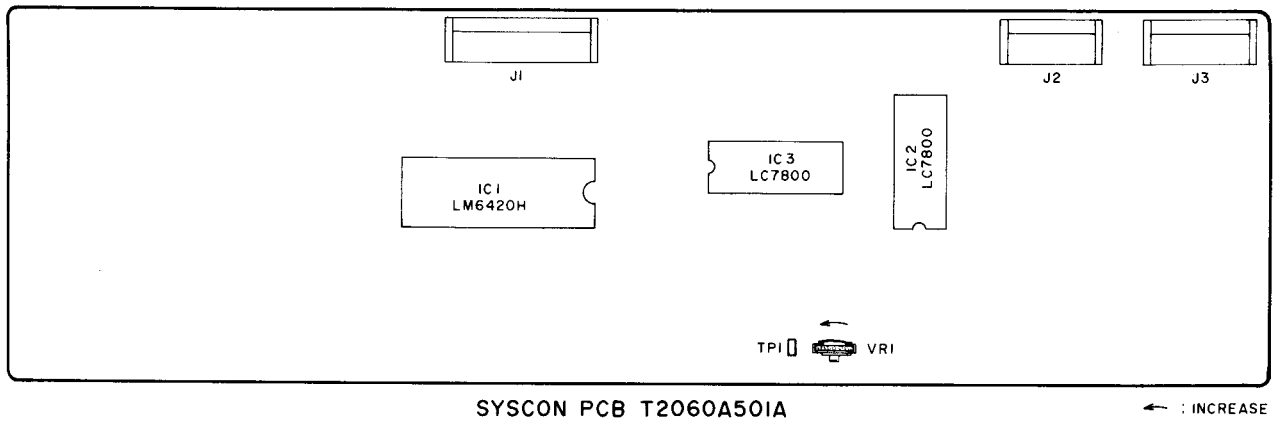


Fig. 7-1 HX-R44 Quick Rev. Sens. Adjustment Point

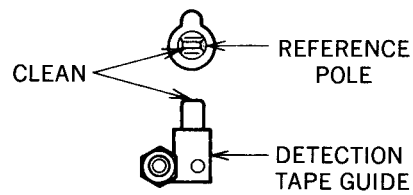


Fig. 7-2

1) Make a tapeless cassette pack by removing the tape from the white colored test tape.
2) Connect a Digital Voltmeter between TP-1 and Ground.
3) Using the tapeless cassette pack, adjust VR1 so that the Digital voltmeter reads 14 V ± 0.5 V DC at FWD play mode.
4) If the Digital voltmeter reading is not increase to 14V DC at VR1 maximum. Remove the Resister R32 (150 kohms) from the system control P.C Board, and again adjust VR1 as the same manner in item 3).

NOTE: Clean the reference pole and the Detection tape guide before adjustment. (Refer to Fig. 7-2)

7.2 PRE-AMP P.C BOARD ADJUSTMENT

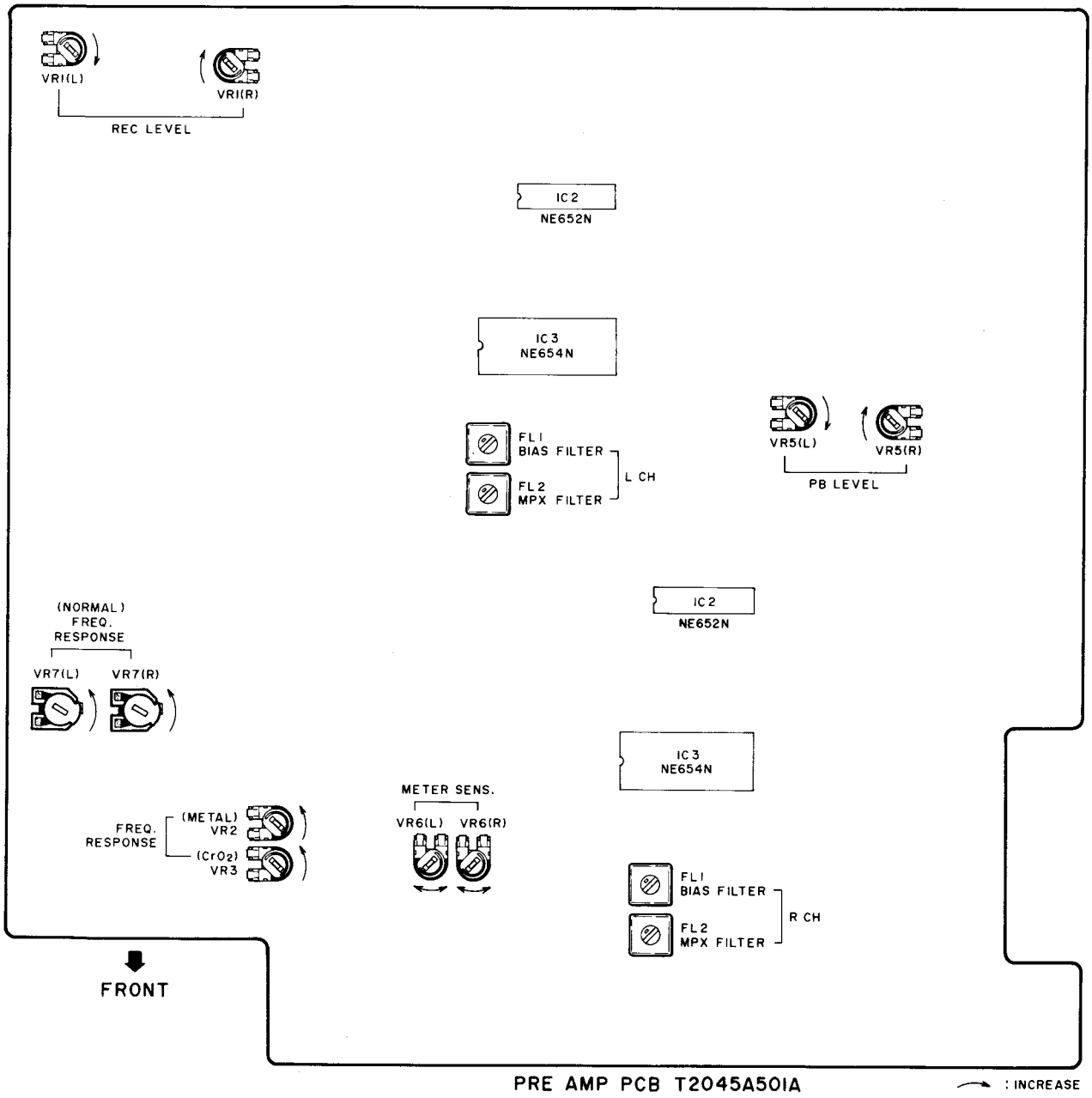


Fig. 7-3 HX-R44 Pre-Amp PCB ADJ Point

Step	Adjustment Item	Test Tape & Supply Signal	Mode	ADJ. Parts	Results	Remarks
1	FWD PB Level	333Hz (AT-750773) or 315 Hz (AT-750773)	FWD PB	VR5	–6.1 ± 0.2 dBm or –5.5 ± 0.2 dBm	
2	REV PB Level	333 Hz (AT-750773) or 315 Hz (AT-750773)	REV PB		–6.1 ± 0.2 dBm or –5.5 ± 0.2 dBm	Confirmation
3	Normal Position Frequency Response	Normal Blank Tape 1 kHz, 10 kHz –25.5 dBm	REC/PB	VR7	1 kHz, 10 kHz Flat ± 0.3 dB	
4	CrO_2 Position Frequency Response	CrO_2 Blank Tape 1 kHz, 10 kHz –25.5 dBm	REC/PB	VR3	1 kHz, 10 kHz Flat ± 0.8 dB	
5	Metal Position Frequency Response	Metal Blank Tape 1 kHz, 10 kHz –25.5 dBm	REC/PB	VR2	1 kHz, 10 kHz Flat ± 0.8 dBm	
6	REC Level	Normal Blank Tape 1 kHz, –5.5 dBm	REC/PB	VR1	–5.5 ± 0.5 dBm	
7	Bias Filter	No Signal input	REC	FL1	Minimum output	Set REC Volume to Maximum
8	Meter Sensitivity	1 kHz input	REC PAUSE	VR6	0vu indicated at Line output –5.9 ± 0.2 dBm	At this time, 0.1 dB decrease the Line Output level and confirm the 0vu indicator is light off.
9	MPX Filter	19 kHz from oscillator	REC	FL2	Minimum output	DOLBY NR SW "ON"

NOTES:
1. Above adjustments except for Step 7 to 9 are all at FWD mode, and these adjustments at REV mode are not necessary, but the confirmation of each step at REV mode should be made.
2. Above adjustment except for step 9, adjustment should be made with Dolby N.R at OFF position.
3. Use only the tapes recommended for each adjustment:
   NORMAL Tape: MAXELL UD C-60
   CrO_2 Tape: TDK SA C-60
   METAL Tape: TDK MA C-60
4. Refer to Fig. 7-3, for above adjustments

VIII. DC RESISTANCE OF HEADS

Description	DC Resistance
REC/PB HEAD	360 ohms ± 25%
ERASE HEAD	3.5 Ohms

IX. P.C BOARD TITLES AND IDENTIFICATION NUMBERS

P.C Board Titles		P.C Board Number	Remark
PRE - AMP	P.C BOARD	T2045A501A	
JACK	P.C BOARD	T2045A501B	
SYSCON	P.C BOARD	T2060A501A	
METER	P.C BOARD	T2060A501B	
POWER SUPPLY	P.C BOARD	T2060B5020	J U
POWER SUPPLY	P.C BOARD	T2060B5021	C A
POWER SUPPLY	P.C BOARD	T2060B5022	E S B
FLEXIBLE	P.C BOARD	CMR01A0020	
CONTROL	P.C BOARD	CMR01C189A	
CAM MOTOR PULSE	P.C BOARD	CMR01C189C	
CAM MOTOR DIRECTION	P.C BOARD	CMR01C189B	
REEL ROTATION	P.C BOARD	CMR01D144D	
DETECTOR (A)	P.C BOARD	CMR01D1290	
DETECTOR (B)	P.C BOARD	CMR01D1620	
GUID DETECTOR	P.C BOARD	CMR01D0220	
HOUSING	P.C BOARD	CMR01D1430	
LEEF SWITCH	P.C BOARD	CMR01C1490	

SECTION 2

PARTS LIST

TABLE OF CONTENTS

RECOMMENDED SPARE PARTS 17
1. MECHA CMR01 BLOCK 18
2. PRE AMP P.C BOARD BLOCK 20
3. SYSTEM CONTROL AND METER P.C BOARD BLOCK 20
4. POWER SUPPLY P.C BOARD BLOCK 21
5. ASSEMBLY BLOCK 21
6. FINAL ASSEMBLY BLOCK 22
INDEX 23

Resistors and Capacitors which are not listed in this parts list, please refer to COMMON LIST FOR SERVICE PARTS.

ATTENTION

1. When placing an order for parts, be sure to list the parts no. model no., and description. There are instances in which if any of this information is omitted, parts cannot be shipped or the wrong parts will be delivered.
2. Please be careful not to make a mistake in the parts no. If the parts no. is in error, a part different from the one ordered may be delivered.
3. Because parts number and parts unit supply in the Preliminary Parts List may be partially changed, please use this parts list for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List shows the parts that are considered necessary for repairs. Other parts, such as resistors and capacitors, are shown in the "Common List for Service Parts". Select and order such parts from the "Common List for Service Parts".
2. The Recommended Spare Parts shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not be supplied in principle.
4. How to read list

a) Mechanism Block

2. HEAD BASE BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK GX-F66R
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20x03STL CMT
2-4	ZS-536488	BID20x08STL CMT
2-5	ZG-402895	CS ANGLE ADJUST SPRING

SP (Service Parts) Classification

A small "x" indicates the inability to show that particular part in the Photo or Illustration.

This number corresponds with the individual parts index number in that figure

This number corresponds with the Figure Number

b) P.C Board Block

6. SYS. CON. P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BA-T2034A070A	PC SYS CON BLK GX-F44R
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-IC3	EI-331661	IC SN7405N
6-IC4	EI-336725	IC M54527P
6-TR1to4	ET-200985	TR 2SC2603 F,G
6-TR5to28	ET-554657	TR 2SA733A P,Q
6-D1	ED-318292	D SILICON H 1S2473T-77 T26
6-D2to4	ED-308952	D GERMA V 1K34A-LR F07
6-D5to10	ED-318292	D SILICON H 1S2473T-77 T26
6-X1	EI-318384	OSC X'TAL NC-18C 3.579545MHZ

SP (Service Parts) Classification

This reference numbers corresponds with symbol numbers of Schematic Diagrams.

5. Both the kind of part and installation position can be determined by the Parts Number. To determine where a parts number is listed, utilize Parts Index at end of Parts List. It is necessary first of all to find the Parts Number. This can be accomplished by using the Reference Number listed at right of parts number in the Parts Index.

WARNING

⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

RECOMMENDED SPARE PARTS

Because, if the parts listed below are on hand, almost any repair can be accomplished, we suggest that you stock these Recommended Spare Parts Items.

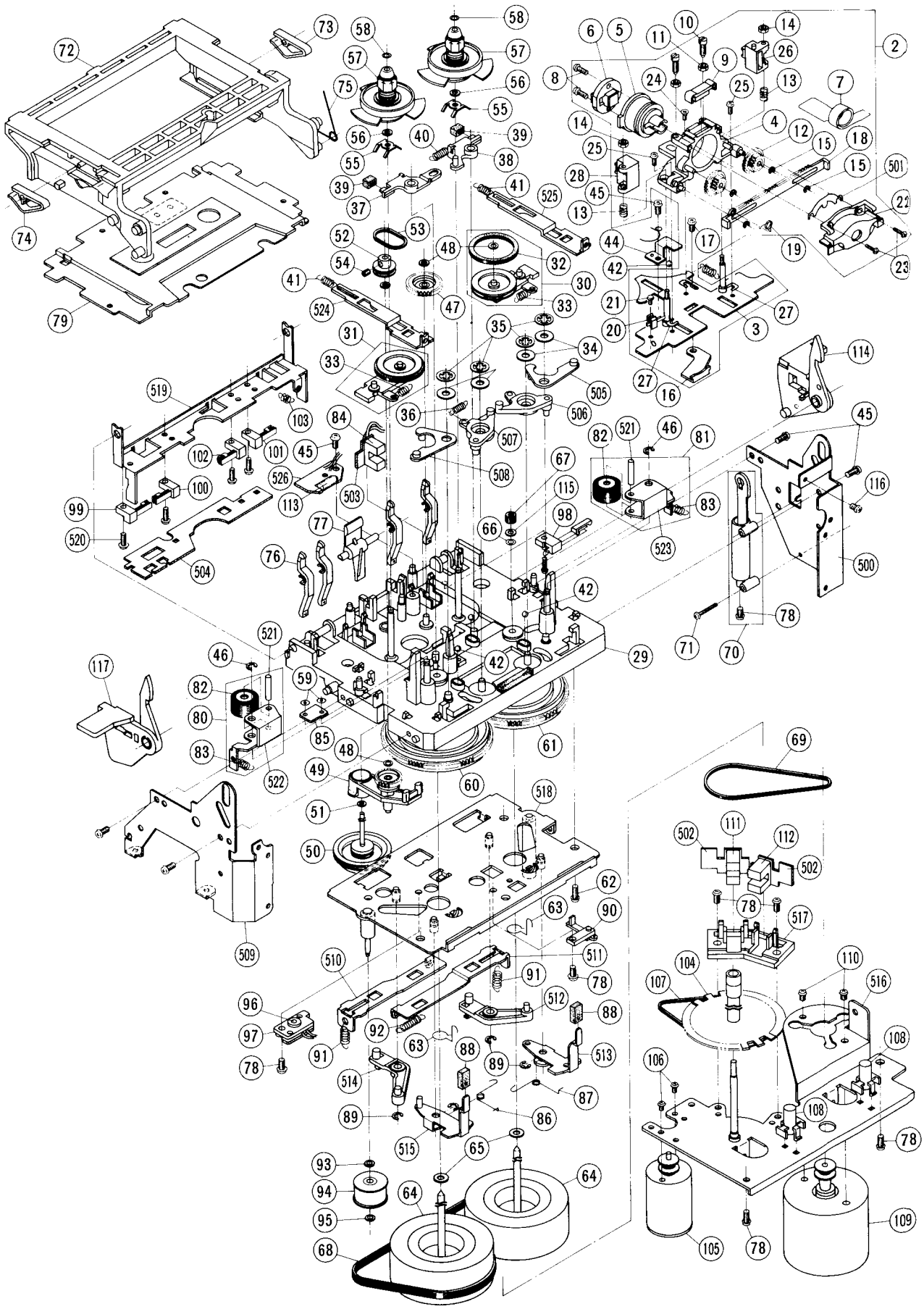
NO.		PARTS NO.	DESCRIPTION
1		BL-T2045A050A	ARM PINCH ROLLER (L) BLK HX-R5
2		BL-T2045A060A	ARM PINCH ROLLER (R) BLK HX-R5
3		BM-B604491	⚠MOTOR (PULLEY) PART EG-510ED 2B2 (M902)
4		BM-B604490	⚠MOTOR OPERATION (PULLEY) PART (M901)
5		BR-344098	REEL TABLE (A) ASSY
6	N	BT-349613	⚠POWER TRANS T2060-A, C (T901)
7	N	BT-349615	⚠POWER TRANS T2060-B, S (T901)
8	N	BT-349614	⚠POWER TRANS T2060-E, V (T901)
9	N	BT-349612	⚠POWER TRANS T2060-J (T901)
10	N	BT-349611	⚠POWER TRANS T2060-U (T901)
11		ED-330319	⚠D SILICON DBA10B 100/1.0A
12		ED-349662	⚠D SILICON ES135E-FA6 100/1.0A
13		ED-310340	D LED GL350 INFRARED RAY (D902)
14		ED-301911	D SILICON H DS448
15		ED-344280	D SILICON H GMA-01-FY2 F05
16		ED-624903	D SILICON H IS2473
17		ED-338092	D ZENER H HZ2FA F10 B1 (2V ZENER)
18	N	ED-346504	D ZENER H HZ20FA F10 3 (20V ZENER)
19	N	ED-352357	D ZENER H HZ20L-3 F10 (20V ZENER)
20	N	ED-346510	D ZENER H HZ24FA F10 3 (24V ZENER)
21		ED-346455	D ZENER H HZ27FA F10 A1 (27V ZENER)
22		ED-337776	D ZENER H HZ3 C1 (3V ZENER)
23	N	ED-346450	D ZENER H HZ6FA F10 B2 (6V ZENER)
24	N	ED-346454	D ZENER H HZ6FA F10 C3 (6V ZENER)
25	N	ED-346469	D ZENER H HZ9FA F10 B2 (9V ZENER)
26	N	ED-346472	D ZENER H HZ9FA F10 C2 (9V ZENER)
27		EF-668474	⚠FUSE SEMKO T 250V 0.40A (E,B,S)
28		EF-593706	⚠FUSE SEMKO T 250V 0.50A (E,B,S)
29		EF-327103	⚠FUSE TSC A 250V 0.50A (U,J)
30		EF-306124	⚠FUSE TSC A 250V 0.63A (U,J)
31		EF-309390	⚠FUSE TSC 125V 0.50A (C,A)
32		EF-305703	⚠FUSE TSC 125V 0.63A (C,A)
33	N	EH-337695	FILTER DB 201AK-005 100KHZ
34		EI-330352	IC BA6109
35		EI-337845	IC BA6146 M
36		EI-336761	IC LA6458S
37		EI-345765	IC LB1292
38		EI-343417	IC LB1294
39		EI-337009	IC LC4049B
40		EI-345759	IC LC7530
41		EI-337008	IC LC7800
42		EI-348465	IC LM6402H-190
43		EI-337228	IC M5218L0
44		EI-337835	IC NE652
45		EI-344291	IC NE654
46		EI-337017	OSC CE CSB800A 0.800000MHZ
47		EL-348214	PL LEAD 28.0V 24MA
48		EM-349595	IND FL FIP48AW11YS
49		EM-349594	IND FL FIP6GM7
50		EO-345760	COIL OSC 1 32-5009-12 100KHZ
51		EO-315758	COIL TUN 1 100Z-431 100.00KHZ
52		EO-337044	COIL TUN 1 102AK-005
53		EQ-337067	RELAY LEAD LAB2NS 2NO 18V
54	N	ER-337696	FILTER DB 201AZ-006 19KHZ
55		ER-318248	R FUSE ERD2FC S10 1/4W 47ROG
56		ES-305733	⚠SW SELECTOR HXW0131-260 01-4 (U)
57		ES-344104	SW LEAF BSW-191 01-1 NO (SW901)
58		ES-344101	SW LEAF MD-1003 01-1 NO (SW905)
59		ES-336814	SW LEAF MSW-1150NBK 01-1 NO (SW902)
60		ES-344253	SW LEAF MSW-1418J 01-1 NO
61		ES-344257	SW LEAF MSW-1418L 01-1 NO
62		ES-337843	SW PUSH ESB-64501 02-2
63		ES-344270	SW PUSH SDLD1P 01-1
64		ES-349597	SW SLIDE 00130329 BLACK 01-3 S
65		ES-349698	SW SLIDE 00130333 GRAY 01-3 S
66		ES-349367	SW TACT KHH10906
67		ET-344102	PHOTO SENSOR GP-1S04
68		ET-310341	PHOTO SENSOR PT350 T (TR902)
69		ET-311977	PHOTO SENSOR SPI-201
70	N	ET-200558	TR 2SA1115 E,F
71		ET-346298	TR 2SA1246 S,T
72		ET-349593	TR 2SA1348
73	N	ET-330607	TR 2SC1312S F,G
74	N	ET-337258	TR 2SC1843 E,F
75	N	ET-309353	TR 2SC2274K E,F
76		ET-328578	TR 2SC2320 E,F
77		ET-349705	TR 2SC2320 E,F,G
78	N	ET-200505	TR 2SC2603 E, F
79		ET-349592	TR 2SC3400
80	N	ET-328868	TR 2SD1012-V G,H
81		ET-310148	TR 2SD612K E,F
82		ET-350948	TR 2SD612K F
83	N	EV-315414	R S-FIX H D8 3P 203
84		EV-322413	R S-FIX H D8 3P 302
85	N	EV-315413	R S-FIX H D8 3P 503
86		EV-336785	R S-FIX H TM8KV2-1S 3P 0.50W 104
87		EV-522652	R S-FIX V V8K1-1 3P 105
88		HR-344103	HEAD COMBO HD425804RVJ
89		MB-344088	BELT CAM
90		MB-344041	BELT CAPSTAN
91		MB-344042	BELT WIND (A)
92		MB-344043	BELT WIND (B)
93		MB-344028	PULLEY RUBBER
94		MB-345139	WHEEL RUBBER
95		MI-344095	IDLER PLAY (L) ASSY
96		MI-344094	IDLER PLAY (R) ASSY

"NOTE" N : New Parts

SYMBOL FOR DESTINATION

A : AAL (U.S.A)
B : UK (England)
C : CSA (Canada)
J : JPN (Japan)
S : SAA (Australia)
U : U/T (Universal Area)
E : CEE (Europe)

MECHA CMR01 BLOCK



1. MECHA CMR01 BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
1-1	BB-T2045A020A	MECHA CMR01 BLK HX-R5
1-2	BH-T2045A030A	HEAD BLK HX-R5
	HEAD BLOCK	
1-3	MZ-B344008	CHASSIS HEAD PART
1-4	HZ-B344009	HOUSING ROTARY PART
1-5	HZ-B344006	HOLDER ROTARY PART
1-6	HR-344103	HEAD COMBO HD425804RVJ
1-7	EA-343156	PC HEAD FLEXIBLE CMR01A0020
1-8	ZS-245147	CTS20x06STL BNI
1-9	HZ-344011	GUIDE ROTARY HEAD
1-10	ZS-344001	SCREW AZIMUTH
1-11	ZW-273734	N20BRS NI3 1
1-12	MZ-344004	GEAR HEAD
1-13	ZG-344012	SP PUSH GUIDE TAPE
1-14	ZW-618884	N20STL CMT 1
1-15	ZW-391397	RING E120SUP CMT
1-16	MZ-344002	PLATE ADJUST
1-17	ZS-442585	BID26x04STL CMT
1-18	MZ-344007	RACK
1-19	ZG-344013	SP TORSION RACK
1-20	ES-344104	SW LEAF BSW-191 01-1 NO (SW901)
1-21	ZS-343125	BID14x03STL BNI
1-22	HZ-344015	COVER HOUSING
1-23	ZS-345773	BID17x06STL BNI
1-24	ZS-524812	CTS20x04STL CMT
1-25	ZS-608095	PAN20x05STL CMT
1-26	HZ-344093	GUIDE TAPE
1-27	ZW-344639A	SPACER ADJUST (A) 0.10MM
1-27	ZW-344639B	SPACER ADJUST (B) 0.15MM
1-27	ZW-344639C	SPACER ADJUST (C) 0.20MM
1-27	ZW-344639D	SPACER ADJUST (D) 0.25MM
1-27	ZW-344639E	SPACER ADJUST (E) 0.30MM
1-27	ZW-344639F	SPACER ADJUST (F) 0.35MM
1-27	ZW-344639G	SPACER ADJUST (G) 0.40MM
1-27	ZW-344639H	SPACER ADJUST (H) 0.45MM
1-27	ZW-344639J	SPACER ADJUST (I) 0.50MM
1-28	BZ-T2045A040A	GUIDE DETECTION BLK HX-R5
1-29	MZ-B344018	CHASSIS MECHA PART
1-30	MI-344094	IDLER PLAY (R) ASSY
1-31	MI-344095	IDLER PLAY (L) ASSY
1-32	MB-345139	WHEEL RUBBER
1-33	ZG-343195	SP PULL IDLER
1-34	ZW-268222	PW31x080x030STL CMT
1-35	ZW-329422	RING CS0300
1-36	ZG-312923	SP T1-3.2/0.2-11.2 T1-040
1-37	ML-344032	LEVER BRAKE (L)
1-38	ML-344033	LEVER BRAKE (R)
1-39	MB-344034	BRAKE RUBBER
1-40	ZG-312925	SP T1-3.2/0.2-14.0 T1-042
1-41	ZG-349016	SP PULL SLIDE
1-42	MV-666887	BALL 250STL
1-43	ZG-343193	SP PULL HEAD CHASSIS RETURN
1-44	MZ-344039	PLATE HEAD HOLD
1-45	ZS-336613	PT PAN26x06STL CMT
1-46	ZW-270088	RING E 190SUP CMT
1-47	MZ-344036	GEAR WIND (B)
1-48	ZW-343120	PW17x040x025PSL
1-49	ML-344096	ARM REWIND ASSY
1-50	TC-344097	WIND ASSY
1-51	ZW-305546	PW21x040x025PSL
1-52	MR-344037	PULLEY WIND
1-53	MB-344043	BELT WIND (B)
1-54	ZS-353047	-SET26x03STL CMT HP
1-55	ZG-344031	SP PLATE BT
1-56	ZW-381644	PW21x040x013PSL
1-57	BR-344098	REEL TABLE (A) ASSY
1-58	ZW-343120	PW17x040x025PSL
1-59	ZW-349046	WASHER FIXATION
1-60	MZ-344019	CAM WHEEL (L)
1-61	MZ-344020	CAM WHEEL (R)
1-62	ZS-336613	PT PAN26x06STL CMT
1-63	ZG-344064	SP PULL EARTH
1-64	BF-344029	FLYWHEEL
1-65	ZW-344047	SPACER FLYWHEEL
1-66	ZW-349047	WASHER OIL STOPPER
1-67	MB-344028	PULLEY RUBBER
1-68	MB-344041	BELT CAPSTAN
1-69	MB-344042	BELT WIND (A)
1-70	MZ-344099	DUMPER ASSY
1-71	ZS-343113	ST PAN20x12STL CMT
1-72	SP-344057	LID CASE
1-73	ZG-336615	SP PLATE CASSETTE HOLDER (B)
1-74	ZG-344939	SP PLATE CASSETTE HOLDER
1-75	ZG-344058A	SP TORSION LID (R)
1-76	ML-344286	LEVER DETECTION (A)
1-77	ML-344053	LEVER DETECTION (B)
1-78	ZS-321194	ST PAN26x05STL CMT
1-79	BD-B344049B	LID DECORATION (B) PART
1-80	BL-T2045A050A	ARM PINCH ROLLER (L) BLK HX-R5
1-81	BL-T2045A060A	ARM PINCH ROLLER (R) BLK HX-R5
1-82	MP-336153	PINCH ROLLER (A)
1-83	ZG-344089	SP PULL PINCH ROLLER
1-84	ET-311977	PHOTO SENSOR SPI-201 (PH-1)
1-85	ET-310341	PHOTO SENSOR PT350T (TR902)
1-86	ZG-345660	SP TORTION RETURN (L)
1-87	ZG-345661	SP TORTION RETURN (R)
1-88	MB-349019	RUBBER ARM RETURN
1-89	ZW-270088	RING E 190SUP CMT
1-90	ES-344101	SW LEAF MD-1003 01-1 NO (SW905)
1-91	ZG-344090	SP PULL DRIVE ARM
1-92	ZG-312945	SP T1-3.2/0.29-14.0 T1-061
1-93	ZW-305546	PW21x040x025PSL
1-94	MR-B344076	PULLEY MIDDLE PART
1-95	ZW-343120	PW17x040x025PSL
1-96	ED-310340	D LED GL350 INFRARED RAY (D902)
1-97	TC-344062	HOLDER STOP SENSOR
1-98	ES-336814	SW LEAF MSW-1150NBK 01-1 NO (SW902)
1-99	ES-344257	SW LEAF MSW-1418L 01-1 NO (SW903)
1-100	ES-344253	SW LEAF MSW-1418J 01-1 NO (SW904)
1-101	ES-344257	SW LEAF MSW-1418L 01-1 NO (SW906)
1-102	ES-344253	SW LEAF MSW-1418J 01-1 NO (SW907)
1-103	ZG-344091	SP PULL HOLDER
1-104	MR-344080	PULLEY CAM SLIT
1-105	BM-B604490	⚠MOTOR OPERATION (PULLEY) PART (M901)
1-106	ZS-477876	PAN20x03STL CMT
1-107	BM-344088	BELT CAM
1-108	MZ-344083	HOLDER THRUST
1-109	BM-B604491	⚠MOTOR (PULLEY) PART EG510ED 2B2 (M902)
1-110	ZS-592378	PAN26x03STL CMT
1-111	ET-344102	PHOTO SENSOR GP-1S04 (PH2)
1-112	ET-344102	PHOTO SENSOR GP-1S04 (PH3)
1-113	EL-348214	PL LEAD 28.0V 24MA
1-114	ML-344055	ARM LOCK (R)
1-115	SZ-349017	FELT CAPSTAN
1-116	ZS-201475	PAN20x03STL NI3
1-117	ML-344056	ARM LOCK (L)
	CONTROL P.C BOARD	
1-118x	ER-333698	⚠R CB H S15 FS RDS 1/2W 821J (R4)

NOTE: Parts listed in 1 to 118 on the exploded view and list are normaly stocked for replacement purpose.
The remaining parts shown in this manual are not normaly stocked, because they are not seldom required for routine service.

2. PRE AMP P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
2-1	BA-T2060A060A	PC PRE AMP BLK HX-R44
	PRE AMP P.C BOARD	
2-IC1	EI-337228	IC M5218L0
2-IC2	EI-344291	IC NE654
2-IC3	EI-337835	IC NE652
2-IC5	EI-336761	IC LA6458S
2-TR1to4	ET-349705	TR 2SC2320 E,F,G
2-TR5	ET-350948	⚠TR 2SD612K F
2-TR6	ET-328868	TR 2SD 1012-V G,H
2-TR7to13	ET-349705	TR 2SC2320 E,F,G
2-TR14	ET-309353	TR 2SC2274K E,F
2-TR15,16	ET-200505	TR 2SC2603 E,F
2-TR18,19	ET-200505	TR 2SC2603 E,F
2-TR20,21	ET-309353	TR 2SC2274K E,F
2-TR22,23	ET-200505	TR 2SC2603 E,F
2-TR25	ET-328578	TR 2SC2320 E,F
2-TR26	ET-337258	TR 2SC1843 E,F
2-TR27	ET-330607	(TR 2SC1312S F,G)
2-TR28	ET-349705	TR 2SC2320 E,F,G
2-TR29	ET-200505	TR 2SC2603 E,F
2-TR30,31	ET-200558	TR 2SA1115 E,F
2-TR32	ET-200505	TR 2SC2603 E,F
2-D1	ED-337776	D ZENER H HZ3 C1
2-D4	ED-344280	D SILICON H GMA-01-FY2 F05
2-D5to9	ED-301911	D SILICON H DS448
2-D10	ED-344280	D SILICON H GMA-01-FY2 F05
2-D11to13	ED-301911	D SILICON H DS448
2-VR1	EV-315414	R S-FIX H D8 3P 203
2-VR2	EV-322413	R S-FIX H D8 3P 302
2-VR3	EV-315414	R S- FIX H D8 3P 203
2-VR5,6	EV-315413	R S-FIX H D8 3P 503
2-VR7	EV-336785	R S-FIX H TM8KV2-1S 3P 0.50W 104
2-RL1	EQ-337067	RELAY LEAD LAB2NS 2NO 18V
2-L1	EO-669273	COIL FIX 2 FL5R200 180
2-L2	EO-347162	COIL FIX 1 L-8 103J
2-T1	EO-345760	COIL OSC 1 32-5009-12 100KHZ
2-FL1	EH-337695	FILTER DB 201AK-005 100KHZ
2-FL2	ER-337696	FILTER DB 201AZ-006 19KHZ
2-FL3	EO-337044	COIL TUN 1 1-2AK-005
2-FL4	EO-315758	COIL TUN 1 100Z-431 100.00KHZ
2-R4	ER-216616	R OMF H SNP FS 1W 681J
2-FR3	ER-318248	⚠R FUSE ERD2FC S10 1/4W 47R0G
2-C57	EC-345817	C PP V F10 APH 272J 630DC
2-C61	EC-314992	C STY V F05 CQF09 681J 50DC
2-C64	EC-314993	C STY V SNP CQFS 751J 50DC
2-C66	EC-201319	C MC V FM 270J 500DC
2-C69	EC-314990	C STY V SNP CQFS 101J 50DC
2-C79	EC-516723	C STY V 271K 50DC
2-C82	EC-419231	C MC V FM 120J 500DC
2-C83	EC-483300	C MC V FM 5R0D 500DC
2-J1	EJ-347664	PIN J YKC21-5053 P 4P
2-J2	EJ-346076	DIN J TCS4690-01-1111 P 8P (REMOTE)
	JACK P.C BOARD	
2-J1B	EJ-345812	PHONE J HLJ0527-3714
2-J2B	EJ-344640	PHONE J HLJ4308-3034

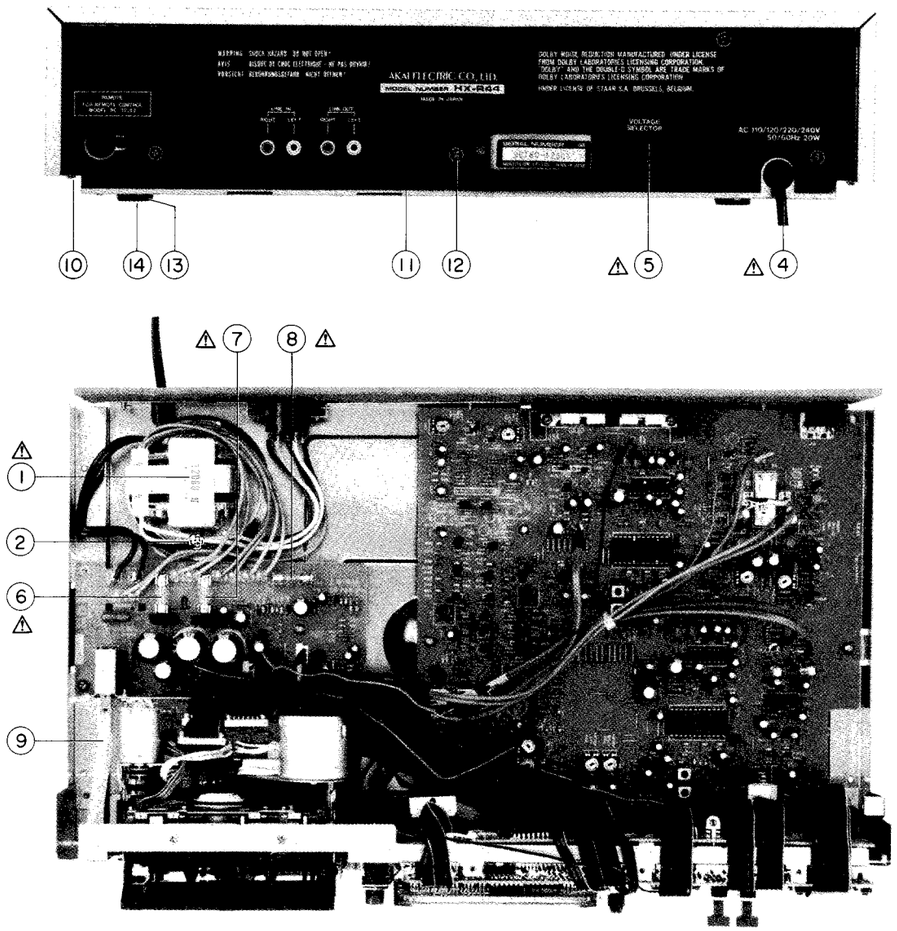
3. SYSTEM CONTROL AND METER P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
3-1	BA-T2060A020A	PC SYSCON/METER BLK HX-R44
3-1B	BA-T2060A020B	PC SYSCON/METER BLK HX-R44-B
	SYSTEM CONTROL P.C BOARD	
3-IC1	EI-348465	IC LM6402H-190
3-IC2,3	EI-337008	IC LC7800
3-IC4	EI-345759	IC LC7530
3-IC5,6	EI-337009	IC LC4049B
3-IC7	EI-330352	IC BA6109
3-TR1	ET-349592	TR 2SC3400
3-TR2,3	ET-200558	TR 2SA1115 E,F
3-TR4	ET-346298	TR 2SA1246 S,T
3-TR5to7	ET-349593	TR 2SA1348
3-TR8	ET-200558	TR 2SA1115 E,F
3-TR9to11	ET-200505	TR 2SC2603 E,F
3-TR12	ET-200558	TR 2SA1115 E,F
3-TR13,14	ET-200505	TR 2SC2603 E,F
3-D1to4	ED-344280	D SILICON H GMA-01-FY2 F05
3-D5,6	ED-624903	D SILICON H1S2473
3-D7	ED-346469	D ZENER H HZ9FA F10 B2
3-D8	ED-344280	D SILICON H GMA-01-FY2 F05
3-D9	ED-346455	D ZENER H HZ27FA F10 A1
3-D10	ED-344280	D SILICON H GMA-01-FY2 F05
3-D11	ED-346472	D ZENER H HZ9FA F10 C2
3-VR1	EV-522652	R S-FIX V V8K1-1 3P 105
3-X1	EI-337017	OSC CE CSB800A 0.800000MHZ
3-CR1	EH-347164	COMP R RKC 1/8 B8 223J
3-CR2	EH-349349	COMP R M-3778
	METER P.C BOARD	
3-IC1B	EI-337009	IC LC4049B
3-IC2Bto4B	EI-343417	IC LB1294
3-IC5B	EI-337845	IC BA6146 M
3-IC6B	EI-337845	IC BA6146 M
3-IC7B,8B	EI-345765	IC LB1292
3-SW1Bto14B	ES-349367	SW TACT KHH10906
3-SW15B	ES-349698	SW SLIDE 00130333 GRAY 01-3 S (EXCEPTBLMODEL)
3-SW16B,18B	ES-337843	SW PUSH ESB-64501 02-2
3-SW31B	ES-349597	SW SLIDE 00130329 BLACK 01-3 (BLMODEL)
3-CR3B,4B	EH-343419	COMP R EXB-P86104K
3-IN1B	EM-349594	IND FL FIP6GM7
3-IN2B	EM-349595	IND FL FIP48AW11YS

4. POWER SUPPLY P.C BOARD BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
4-1U	BA-T2060A030A	PC POWER BLK HX-R44 (U)
4-1J	BA-T2060A030B	PC POWER BLK HX-R44 (J)
4-1C	BA-T2060A030C	PC POWER BLK HX-R44 (C,A)
4-1E	BA-T2060A030D	PC POWER BLK HX-R44 (E,B,S)
		POWER SUPPLY P.C BOARD
4-TR1	ET-310148	⚠TR 2SD612K E,F
4-TR2	ET-200505	⚠TR 2SC2603 E,F
4-TR3	ET-200558	TR 2SA1115 E,F
4-TR4	ET-200505	⚠TR 2SC2603 E,F
4-TR5	ET-100558	TR 2SA1115 E,F
4-TR6	ET-310148	TR 2SD612K E,F
4-TR7	ET-200505	⚠TR 2SC2603 E,F
4-D1	ED-330319	⚠D SILICON DBA10B 100/1.0A
4-D2	ED-352357	D ZENER H HZ20L-3 F10
4-D3	ED-344280	D SILICON H GMA-01-FY2 F05
4-D4	ED-346450	D ZENER H HZ6FA F10 B2
4-D5	ED-344280	D SILICON H GMA-01-FY2 F05
4-D6	ED-346510	D ZENER H HZ24FA F10 3
4-D7	ED-346504	D ZENER H HZ20FA F10 3
4-D8	ED-330319	⚠ D SILICON DBA10B 100/1.0A
4-D9	ED-349662	⚠ D SILICON DS135E-FA6 100/1.0A
4-D10	ED-338092	D ZENER H HZ2FA F10 B1
4-D11,12	ED-346454	D ZENER H HZ6FA F10 C3
4-D13,14	ED-349662	⚠ D SILICON DS135E-FA6 100/1.0A
4-D15	ED-346445	D ZENER H HZ5FA F10 C2
4-SW1	ES-344270	⚠ SW PUSH SOLD1P 01-1
4-R1	ER-333654	R CB H S15 FS RDS 1/2W 332J
4-C1U	EC-338396	⚠C MMY V ECQEW 473M 250AC (U)
4-C1J	EC-338396	⚠C MMY V ECQEW 473M 250AC (J)
4-C1C	EC-320548	⚠C CE V F 103Z 250AC (C,A)
4-C1E	EC-338411	⚠C CE V FZ 103P 400AC (E,B,S)
4-C2	EC-323847	C EC V CUT SM 102M 35.0DC
4-C3	EC-200947	C EC V CUT SM 331 35.0DC
4-C5	EC-316235	C EC V CUT SM 331M 25.0DC

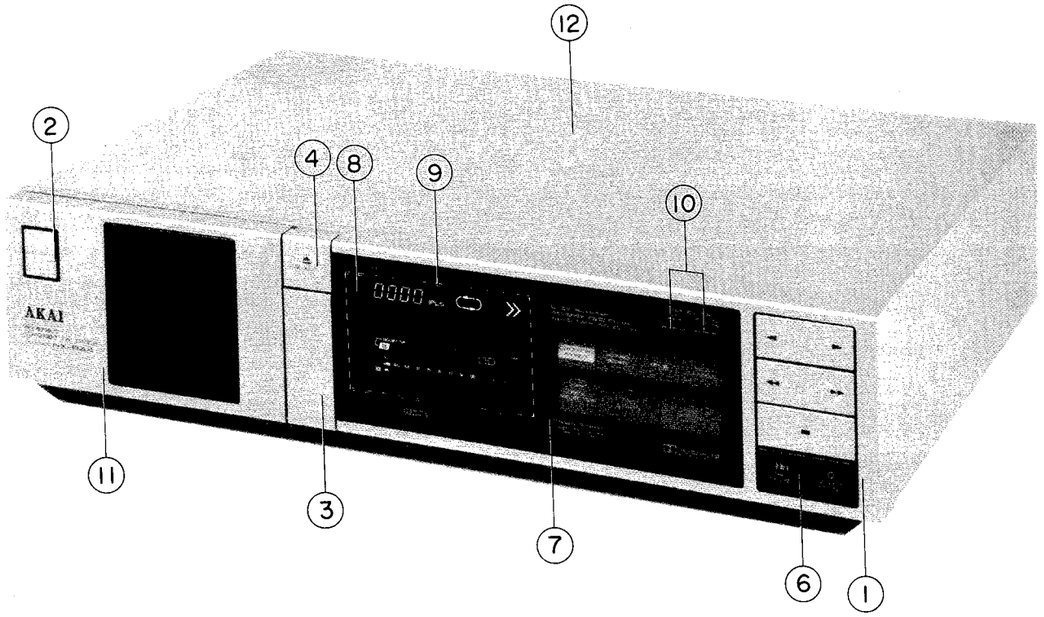
ASSEMBLY BLOCK



5. ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
5-1U	BT-349611	⚠POWER TRANS T2060-U (T901)
5-1J	BT-349612	⚠POWER TRANS T2060-J (T901)
5-1C	BT-348613	⚠POWER TRANS T2060-A,C (T901)
5-1E	BT-349614	⚠POWER TRANS T2060-E,V (T901)
5-1B	BT-348615	⚠POWER TRANS T2060-B,S (T901)
5-2	ZS-314702	ST BID40x10STL CMT
5-3x	ZW-413188	N40STL CMT 1
5-4U	EW-347683	⚠AC CORD 2 CORES VM0129, VFF-CB U/T (U)
5-4J	EW-347836	⚠AC CORD 2 CORES KP-209, VFF-CB J (J)
5-4C	EW-348215	⚠AC CORD 2 CORES KP10, SPT1 105CCB UC (C,A)
5-4E	EW-347682	⚠AC CORD 2 CORES VM0364, FC3097-CB EV (E)
5-4B	EW-347680	⚠AC CORD 2 CORES LCFL 2x0.75-CB B (B)
5-4S	EW-347681	⚠AC CORD 2 CORES VM0436, FC3093-CB S (S)
5-5	ES-305733	⚠SW SELECTOR HXW 0131-260 01-3 (U)
5-6U	EF-306124	⚠FUSE TSC A 250V 0.63A (F1) (U,J)
5-7U	EF-306124	⚠FUSE TSC A 250V 0.63A (F2) (U,J)
5-8U	EF-327103	⚠FUSE TSC A 250V 0.50A (F3) (U,J)
5-6C	EF-305703	⚠FUSE TSC 125V 0.63A (F1) (C,A)
5-7C	EF-305703	⚠FUSE TSC 125V 0.63A (F2) (C,A)
5-8C	EF-309390	⚠FUSE TSC 125V 0.50A (F3) (C,A)
5-6E	EF-593706	⚠FUSE SEMKO T 250V 0.50A (F1) (E,B,S)
5-7E	EF-593706	⚠FUSE SEMKO T 250V 0.50A (F2) (E,B,S)
5-8E	EF-668474	⚠ FUSE SEMKO T 250V 0.40A (F3) (E,B,S)
5-9	MZ-349534	JOINT POWER
5-10	ZS-455207	T2BR30x05STL CMT
5-11U	SP-351185N	PANEL REAR BOARD HX-R44 (U)
5-11J	SP-351185P	PANEL REAR BOARD HX-R44 (J)
5-11C	SP-351185Q	PANEL REAR BOARD HX-R44 (A,C)
5-11E	SP-351185R	PANEL REAR BOARD HX-R44 (E)
5-11B	SP-351185T	PANEL REAR BOARD HX-R44 (B,S)
5-12	ZS-352120	T2BR30x08STL BCM C080
5-13	SA-349332	FOOT
5-14	ZS-313486	ST PAN30x06STL CMT C
5-15x	ZW-305013	RV POP32 (A)

FINAL ASSEMBLY BLOCK



6. FINAL ASSEMBLY BLOCK

REF. NO.	PARTS NO.	DESCRIPTION
6-1	BD-T2060A040A	PANEL FRONT BLK HX-R44
6-1P	BD-T2060A040B	PANEL FRONT BLK HX-R44-P (EXCEPT J)
6-1B	BD-T2060A040C	PANEL FRONT BLK HX-R44-B
6-2	SK-343017G	KNOB POWER
6-2P	SK-343017B	KNOB POWER-P
6-2B	SK-343017F	KNOB POWER-B
6-3	SP-349517A	PANEL DOOR
6-3P	SP-349617B	PANEL DOOR-P
6-3B	SP-349517C	PANEL DOOR-B
6-4	SK-349513A	KNOB EJECT
6-4P	SK-349513B	KNOB EJECT-P
6-4B	SK-349513C	KNOB EJECT-B
6-5x	ZG-313182	SP C-4.5/0.35-25.0 C-029
6-6	SK-349516G	KNOB OPERATE (D)
6-6B	SK-349516L	KNOB OPERATE (D)-B
6-7	SP-B349526	PANEL TEN KEY (B) PART
6-7B	SP-B349526B	PANEL TEN KEY (B)-2 PART
6-8	SP-349520C	WINDOW METER (3)
6-9	SE-353076	WIND FILTER
6-10	SK-345105J	KNOB DOLBY (F)
6-10B	SK-345105L	KNOB DOLBY (F)-B
6-11	BD-B349521A	LID PANEL (1) PART
6-11P	BD-B349521B	LID PANEL (1)-P PART
6-11B	BD-B349521M	LID PANEL (1)-B PART
6-12	SP-344591A	COVER UPPER
6-12P	SP-344591B	COVER UPPER P
6-12B	SP-344591D	COVER UPPER-B-(2)

SYMBOL FOR COLOR VARIATION

NONE – SILVER
P – PEARL SHADOW
B or BL – BLACK

INDEX

PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
BA-T2060A020A	3-1	ED-624903	3-D6	ES-349698	3-SW15B	MB-344088	1-107
BA-T2060A020B	3-1B	ED-624903	3-D5	ET-200505	2-TR16	MB-345139	1-32
BA-T2060A030A	4-1U	EF-305703	5-6C	ET-200505	2-TR15	MB-349019	1-88
BA-T2060A030B	4-1J	EF-305703	5-7C	ET-200505	2-TR18	MI-344094	1-30
BA-T2060A030C	4-1C	EF-306124	5-6U	ET-200505	2-TR19	MI-344095	1-31
BA-T2060A030D	4-1E	EF-306124	5-7U	ET-200505	2-TR23	ML-344032	1-37
BA-T2060A060A	2-1	EF-309390	5-8C	ET-200505	2-TR22	ML-344033	1-38
BB-T2045A020A	1-1	EF-327103	5-8U	ET-200505	2-TR29	ML-344053	1-77
BD-B344049B	1-79	EF-593706	5-6E	ET-200505	2-TR32	ML-344055	1-114
BD-B349521A	6-11	EF-593706	5-7E	ET-200505	3-TR9	ML-344056	1-117
BD-B349521B	6-11P	EF-668474	5-8E	ET-200505	3-TR10	ML-344096	1-49
BD-B349521M	6-11B	EH-337695	2-FL1	ET-200505	3-TR11	ML-344286	1-76
BD-T2060A040A	6-1	EH-343419	3-CR3B	ET-200505	3-TR13	MP-336153	1-82
BD-T2060A040B	6-1P	EH-343419	3-CR4B	ET-200505	3-TR14	MR-B344076	1-94
BD-T2060A040C	6-1B	EH-347164	3-CR1	ET-200505	4-TR2	MR-344037	1-52
BF-344029	1-64	EH-349349	3-CR2	ET-200505	4-TR4	MR-344080	1-104
BH-T2045A030A	1-2	EI-330352	3-IC7	ET-200505	4-TR7	MV-666887	1-42
BL-T2045A050A	1-80	EI-336761	2-IC5	ET-200558	2-TR30	MZ-B344008	1-3
BL-T2045A060A	1-81	EI-337008	3-IC2	ET-200558	2-TR31	MZ-B344018	1-29
BM-B604490	1-105	EI-337008	3-IC3	ET-200558	3-TR2	MZ-344002	1-16
BM-B604491	1-109	EI-337009	3-IC5	ET-200558	3-TR3	MZ-344004	1-12
BR-344098	1-57	EI-337009	3-IC6	ET-200558	3-TR8	MZ-344007	1-18
BT-349611	5-1U	EI-337009	3-IC1B	ET-200558	3-TR12	MZ-344019	1-60
BT-349612	5-1J	EI-337017	3-X1	ET-200558	4-TR3	MZ-344020	1-61
BT-349613	5-1C	EI-337228	2-IC1	ET-200558	4-TR5	MZ-344036	1-47
BT-349614	5-1E	EI-337835	2-IC3	ET-309353	2-TR14	MZ-344039	1-44
BT-349615	5-1B	EI-337845	3-IC5B	ET-309353	2-TR20	MZ-344083	1-108
BZ-T2045A040A	1-28	EI-337845	3-IC6B	ET-309353	2-TR21	MZ-344099	1-70
EA-343156	1-7	EI-343417	3-IC2B	ET-310148	4-TR1	MZ-349534	5-9
EC-200947	4-C3	EI-343417	3-IC3B	ET-310148	4-TR6	SA-349332	5-13
EC-201319	2-C66	EI-343417	3-IC4B	ET-310341	1-85	SE-353076	6-9
EC-314990	2-C69	EI-344291	2-IC2	ET-311977	1-84	SK-343017B	6-2P
EC-314992	2-C61	EI-345759	3-IC4	ET-328578	2-TR25	SK-343017F	6-2B
EC-314993	2-C64	EI-345765	3-IC7B	ET-328868	2-TR6	SK-343017G	6-2
EC-316235	4-C5	EI-345765	3-IC8B	ET-330607	2-TR27	SK-345105J	6-10
EC-320548	4-C1C	EI-348465	3-IC1	ET-337258	2-TR26	SK-345105L	6-10B
EC-323847	4-C2	EJ-344640	2-J2B	ET-344102	1-111	SK-349513A	6-4
EC-338396	4-C1J	EJ-345812	2-J1B	ET-344102	1-112	SK-349513B	6-4P
EC-338396	4-C1U	EJ-346076	2-J2	ET-346298	3-TR4	SK-349513C	6-4B
EC-338411	4-C1E	EJ-347664	2-J1	ET-349592	3-TR1	SK-349516G	6-6
EC-345817	2-C57	EL-348214	1-113	ET-349593	3-TR5	SK-349516L	6-6B
EC-419231	2-C82	EM-349594	3-IN1B	ET-349593	3-TR6	SP-B349526	6-7
EC-483300	2-C83	EM-349595	3-IN2B	ET-349593	3-TR7	SP-B349526B	6-7B
EC-516723	2-C79	EO-315758	2-FL4	ET-349705	2-TR1	SP-344057	1-72
ED-301911	2-D6	EO-337044	2-FL3	ET-349705	2-TR2	SP-344591A	6-12
ED-301911	2-D7	EO-345760	2-T1	ET-349705	2-TR3	SP-344591B	6-12P
ED-301911	2-D8	EO-347162	2-L2	ET-349705	2-TR4	SP-344591D	6-12B
ED-301911	2-D9	EO-669273	2-L1	ET-349705	2-TR7	SP-349517A	6-3
ED-301911	2-D11	EQ-337067	2-RL1	ET-349705	2-TR8	SP-349517B	6-3P
ED-301911	2-D5	ER-318248	2-FR3	ET-349705	2-TR9	SP-349517C	6-3B
ED-301911	2-D12	ER-326616	2-R4	ET-349705	2-TR10	SP-349520C	6-8
ED-301911	2-D13	ER-333654	4-R1	ET-349705	2-TR11	SP-351185N	5-11U
ED-310340	1-96	ER-333698	1-118x	ET-349705	2-TR12	SP-351185P	5-11J
ED-330319	4-D1	ER-337696	2-FL2	ET-349705	2-TR13	SP-351185Q	5-11C
ED-330319	4-D8	ES-305733	5-5	ET-349705	2-TR28	SP-351185R	5-11E
ED-337776	2-D1	ES-336814	1-98	ET-350948	2-TR5	SP-351185T	5-11B
ED-338092	4-D10	ES-337843	3-SW16B	EV-315413	2-VR6	SZ-349017	1-115
ED-344280	2-D4	ES-337843	3-SW17B	EV-315413	2-VR5	TC-344062	1-97
ED-344280	2-D10	ES-344101	1-90	EV-315414	2-VR1	TC-344097	1-50
ED-344280	3-D1	ES-344104	1-20	EV-315414	2-VR3	ZG-312923	1-36
ED-344280	3-D2	ES-344253	1-100	EV-322413	2-VR2	ZG-312925	1-40
ED-344280	3-D3	ES-344253	1-102	EV-336785	2-VR7	ZG-312945	1-92
ED-344280	3-D4	ES-344257	1-99	EV-522652	3-VR1	ZG-313182	6-5x
ED-344280	3-D8	ES-344257	1-101	EW-347680	5-4B	ZG-336615	1-73
ED-344280	3-D10	ES-344270	4-SW1	EW-347681	5-4S	ZG-343193	1-43
ED-344280	4-D3	ES-349367	3-SW10B	EW-347682	5-4E	ZG-343195	1-33
ED-344280	4-D5	ES-349367	3-SW11B	EW-347683	5-4U	ZG-344012	1-13
ED-346445	4-D15	ES-349367	3-SW12B	EW-347836	5-4J	ZG-344013	1-19
ED-346450	4-D4	ES-349367	3-SW13B	EW-348215	5-4C	ZG-344031	1-55
ED-346454	4-D12	ES-349367	3-SW14B	HR-344103	1-6	ZG-344058A	1-75
ED-346454	4-D11	ES-349367	3-SW1B	HZ-B344006	1-5	ZG-344064	1-63
ED-346455	3-D9	ES-349367	3-SW2B	HZ-B344009	1-4	ZG-344089	1-83
ED-346469	3-D7	ES-349367	3-SW3B	HZ-344011	1-9	ZG-344090	1-91
ED-346472	3-D11	ES-349367	3-SW4B	HZ-344015	1-22	ZG-344091	1-103
ED-346504	4-D7	ES-349367	3-SW5B	HZ-344093	1-26	ZG-344939	1-74
ED-346510	4-D6	ES-349367	3-SW6B	MB-344028	1-67	ZG-345660	1-86
ED-349662	4-D9	ES-349367	3-SW7B	MB-344034	1-39	ZG-345661	1-87
ED-349662	4-D14	ES-349367	3-SW8B	MB-344041	1-68	ZG-349016	1-41
ED-349662	4-D13	ES-349367	3-SW9B	MB-344042	1-69	ZS-201475	1-116
ED-352357	4-D2	ES-349597	3-SW31B	MB-344043	1-53	ZS-245147	1-8

INDEX

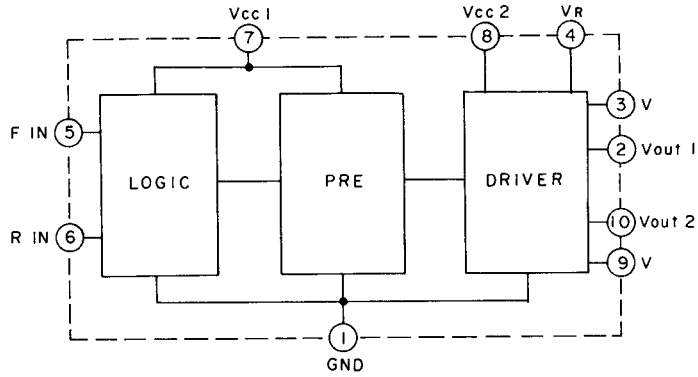
PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.	PARTS NO.	REF. NO.
ZS-313486	5-14						
ZS-314702	5-2						
ZS-321194	1-78						
ZS-336613	1-62						
ZS-336613	1-45						
ZS-343113	1-71						
ZS-343125	1-21						
ZS-344001	1-10						
ZS-345773	1-23						
ZS-352120	5-12						
ZS-353047	1-54						
ZS-442585	1-17						
ZS-455207	5-10						
ZS-477876	1-106						
ZS-524812	1-24						
ZS-592378	1-110						
ZS-608095	1-25						
ZW-268222	1-34						
ZW-270088	1-89						
ZW-270088	1-46						
ZW-273734	1-11						
ZW-305013	5-15x						
ZW-305546	1-93						
ZW-305546	1-51						
ZW-329422	1-35						
ZW-343120	1-58						
ZW-343120	1-95						
ZW-343120	1-48						
ZW-344047	1-65						
ZW-344639A	1-27						
ZW-344639B	1-27						
ZW-344639C	1-27						
ZW-344639D	1-27						
ZW-344639E	1-27						
ZW-344639F	1-27						
ZW-344639G	1-27						
ZW-344639H	1-27						
ZW-344639J	1-27						
ZW-349046	1-59						
ZW-349047	1-66						
ZW-381644	1-56						
ZW-391397	1-15						
ZW-413188	5-3x						
ZW-618884	1-14						

AKAI

MODEL HX-R44

P.C BOARDS
SCHEMATIC DIAGRAM

BA6109



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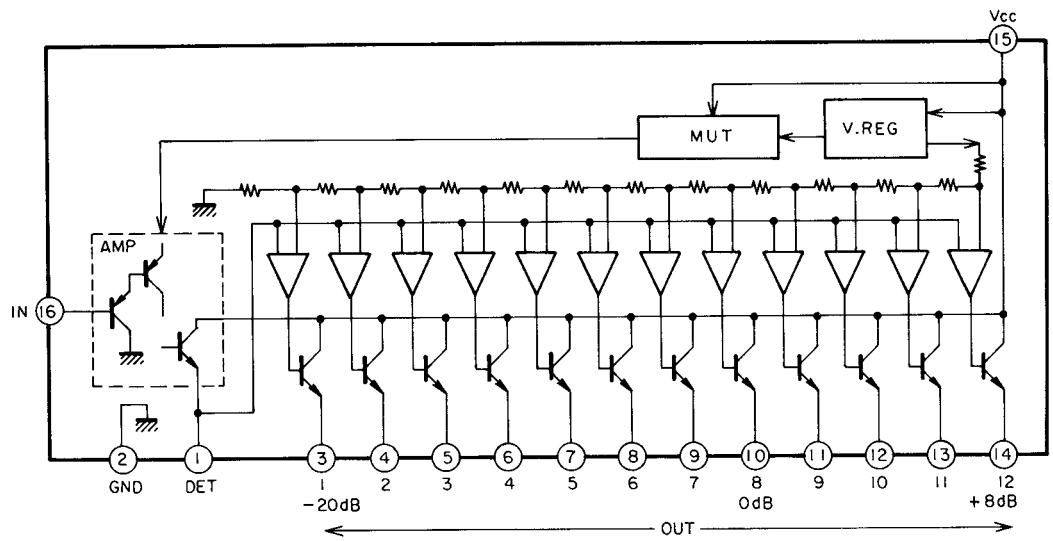

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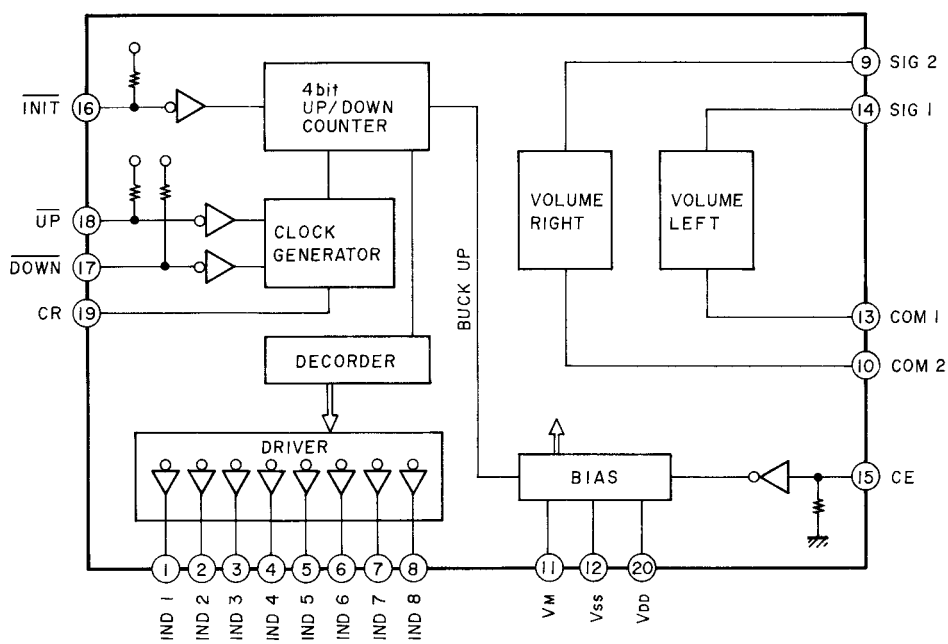

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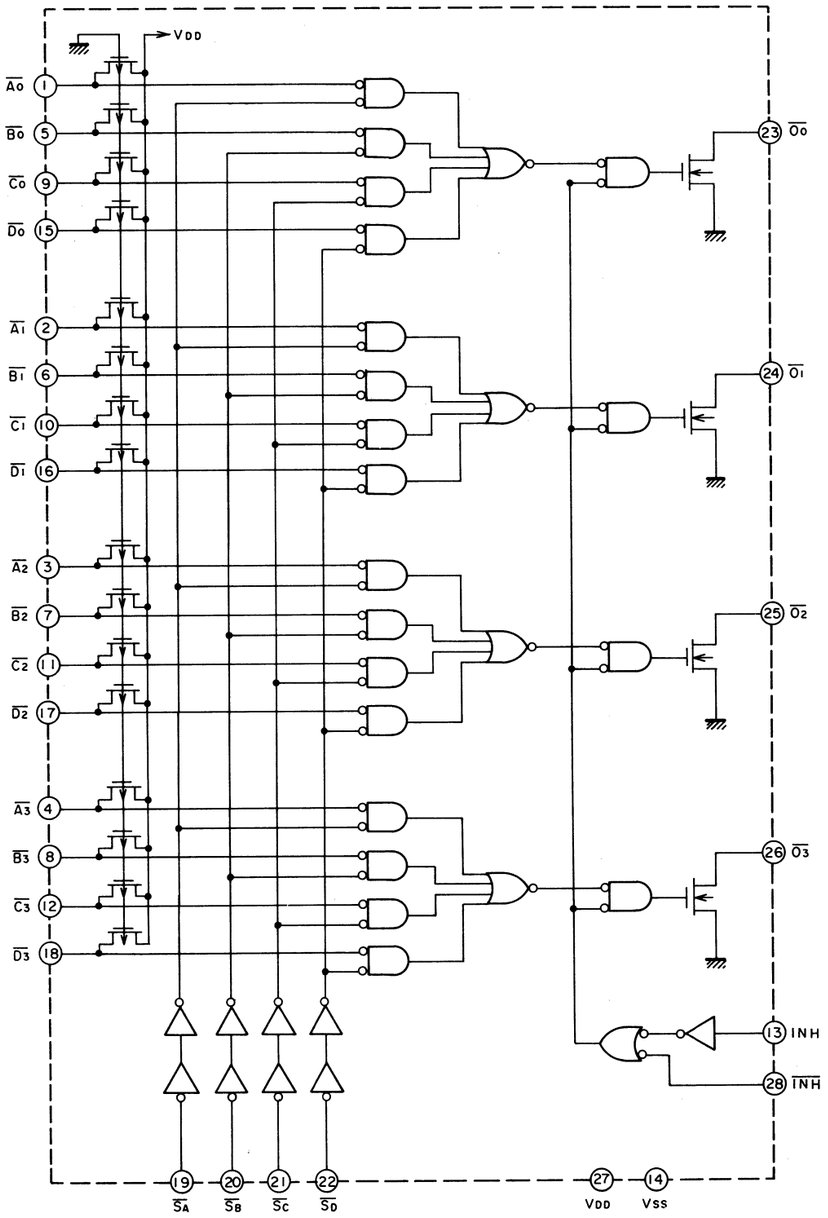


LM6402H-190

Pin No.	Symbol	Description
1	XTAL	Xin
2	C0	Data Input 1
3	C1	Data Input 2
4	C2	Data Input 3
5	C3	Data Input 4
6	$\overline{INT}$	Cam Motor Pulse Input
7	$\overline{RES}$	Reset
8	D0	Electronic Counter 1 Digit
9	D1	Electronic Counter 2 Digit
10	D2	Electronic Counter 3 Digit
11	D3	Electronic Counter 4 Digit
12	E0	7 Segment Drive Output a
13	E1	7 Segment Drive Output b — Output, Light ON at "L"
14	E2	7 Segment Drive Output c
15	E3	7 Segment Drive Output d
16	F0	7 Segment Drive Output e
17	F1	7 Segment Drive Output f
18	F2	7 Segment Drive Output g
19	F3	Strobe for Input Port Select
20	TEST	GND
21	VSS	GND
22	G0	Reverse — Cam Motor Control Output
23	G1	Forward — Cam Motor Control Output
24	G2	CONTI. REV — FLD Drive Output, Lights ON at "L"
25	G3	ONCE REV — FLD Drive Output, Lights ON at "L"
26	H0	IPLS — FLD Drive Output, Lights ON at "L"
27	H1	REC — FLD Drive Output, Lights ON at "L"
28	H2	REV — FLD Drive Output, Lights ON at "L"
29	H3	FWD — FLD Drive Output, Lights ON at "L"
30	I0	Metal — FLD Drive Output, Lights ON at "L"
31	I1	CrO_2 — FLD Drive Output, Lights ON at "L"
32	I2	Normal — FLD Drive Output, Lights ON at "L"
33	A0	External Control output, No connect
34	A1	Reel Rotation Pulse Input.
35	A2	Cam Direction Detector Input.
36	A3	Cam Mode Stop Detector Input.
38	B1	REC MUTE — Output, activates at "H"
38	B1	PB MUTE — Output, activates at "H"
39	B2	O.S.C. Control output, activates at "L".
40	B3	REC/PB Control, "H" → PB, "L" → REC.
41	VDD	+5V
42	EXTAL	EXin

HX-R44

プリ アンプ基板
PRE AMP PCB
T2045A5040

メーター基板
METER PCB T2060A501B

電源基板
POWER SUPPLY PCB

U J T2060B5020 A C T2060B5021 E B S T2060B5022

システム コントロール基板
SYSTEM CONTROL
T2060A501A

コントロール基板
CONTROL PCB
CMR01C189A

カム モーター パルス基板
CAM MOTOR PULSE PCB
CMR01C189C

ディテクター(A)基板
DETECTOR(A) PCB
CMR01D1290

ディテクター(B)基板
DETECTOR(B) PCB
CMR01D1620

カム モーターディレクション基板
CAM MOTOR DIRECTION PCB
CMR01C189B

リール ローテーション基板
REEL ROTATION PCB

リーフ スイッチ基板
LEAF SWITCH PCB
CMR01C1490

ガイド ディテクター基板
GUIDE DETECTOR PCB
CMR01D0220

ハウジング基板
HOUSING PCB
CMR01D1430

※	U J	C A	E S B
F1	⚠ 630mA 250V	⚠ 630mA 125V	⚠ T500mA
F2	⚠ 630mA 250V	⚠ 630mA 125V	⚠ T500mA
F3	⚠ 500mA 250V	⚠ 500mA 125V	⚠ T400mA

注意 ⚠の付された部品は、安全上重要部品です 交換の際は、指定部品以外は使用しないこと

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: ⚠ IL INDIQU LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.

= B (POWER SUPPLY) LINE : B電源
= REC SIGNAL LINE : 録音信号系

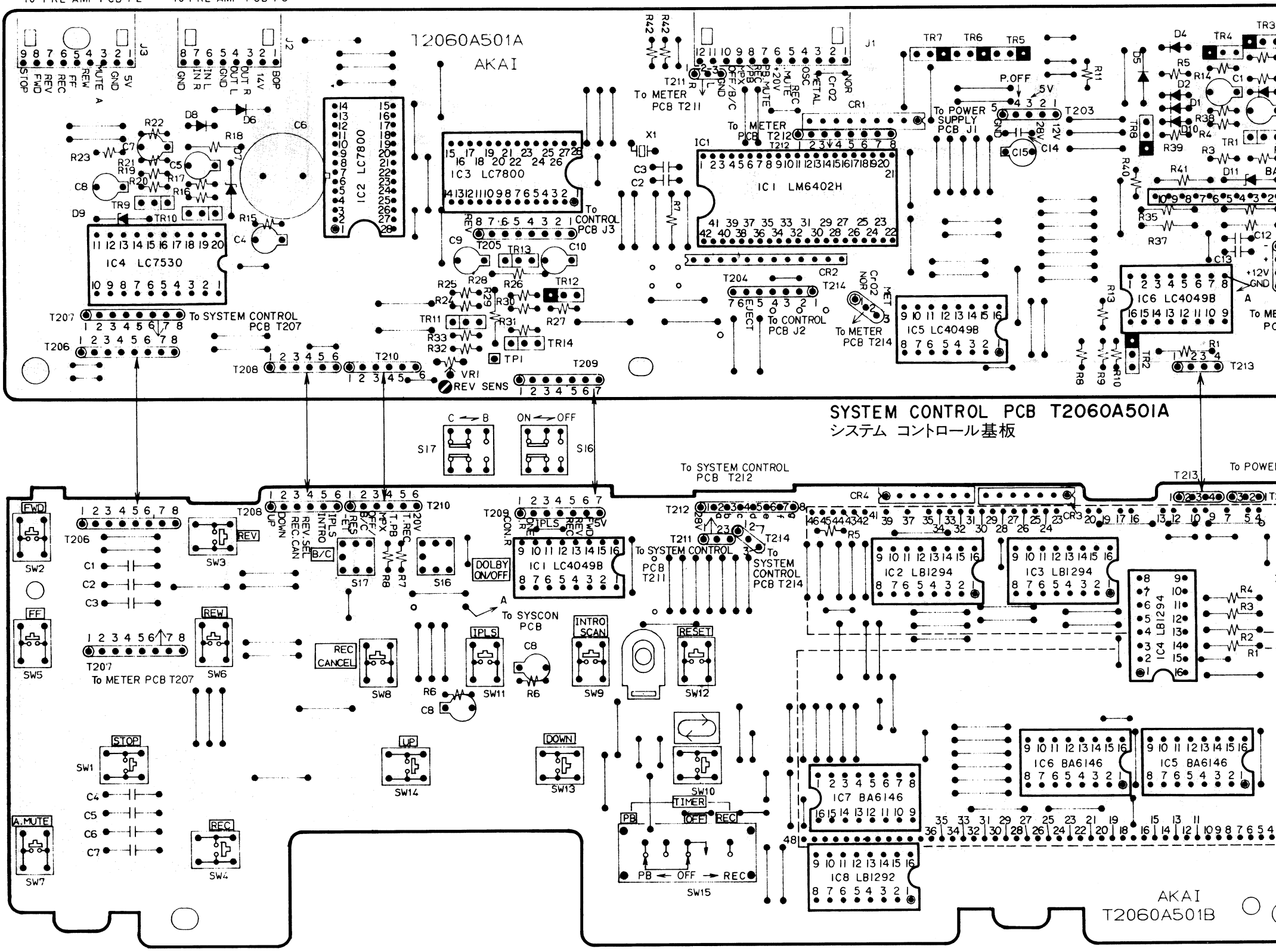
※ VOLTAGES INDICATED AT PB MODE
各電圧値は再生時における値です

2SA1246 (E C B) 2SD612K (E C B) 2SA1115 2SC2603 (E C B) 2SC3400 (E C B)

備考
C, R の単位(特に指定された部品以外)
抵抗……Ω 1/6W(J), (FS)記号は不燃性部品
コンデンサ……μF 50WV(J)
各電圧は、GND間のDC電圧をデジタルボルトメーターにて測定した値です

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W(J)
ALL CAPACITORS IN μF 50WV(J)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

HX-R44
POWER & SYSCON SCHMATIC DIAGRAM
NO. 2-1 840327A 4C



METER PCB T2060A

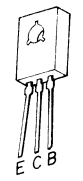
メーター基板

※	F1	F2	F3
J,U	630mA 250V	630mA 250V	500mA 250V
C,A	630mA 125V	630mA 125V	500mA 125V
E,B,S	T500mA	T500mA	T400mA

TR1,6 -----2SD612K(E,F)
TR2,4,7 ----2SC2603(E,F)
TR3,5 -----2SA1115(E,F)

=PNP TRANSISTOR

=NPN TRANSISTOR



2SD612K

2SC2603
2SA1115

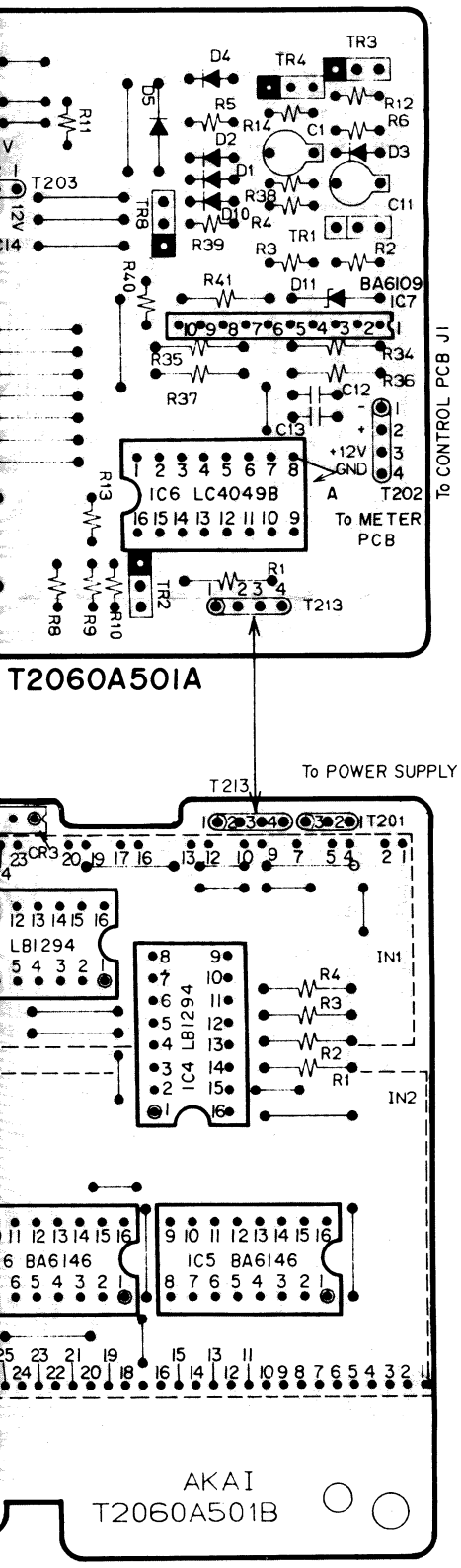
電源基板

POWER SUPPLY PCB

T2060B5020 U,J

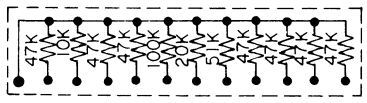
5021 C,A

5022 E,B,S

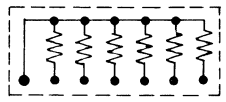


METER PCB T2060A501B
メーター基板

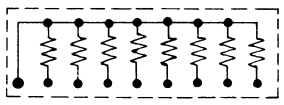
CR2



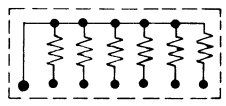
CR3 100K x 6

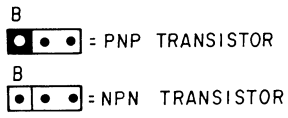


CR1 22K x 8



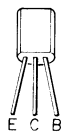
CR4 100K x 6





TR1 - - - - - - - - - 2SC3400
TR2,3,8,12 - - - - 2SA1115(E,F)
TR4 - - - - - - - - 2SA1246 ST
TR5 to 7 - - - - - - 2SA1348
TR9 to 11,13,14- - -2SC2603(E,F)

2SA1115
2SC2603



2SA1246

2SC3400

注意：⚠の付された部品は、安全上重要部品です 交換の際は、指定部品以外は使用しないこと

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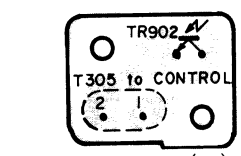
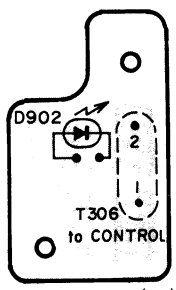
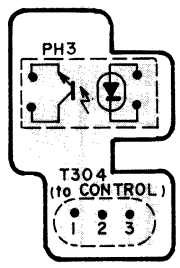


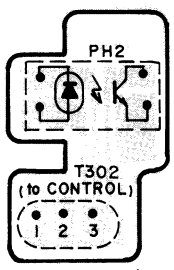
ディテクター(A)基板
DETECTOR(A) PCB
CMR01D1290



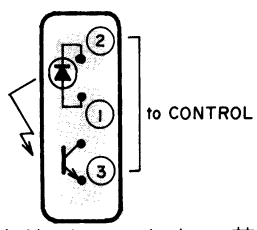
ディテクター(B)基板
DETECTOR(B) PCB
CMR01D1620



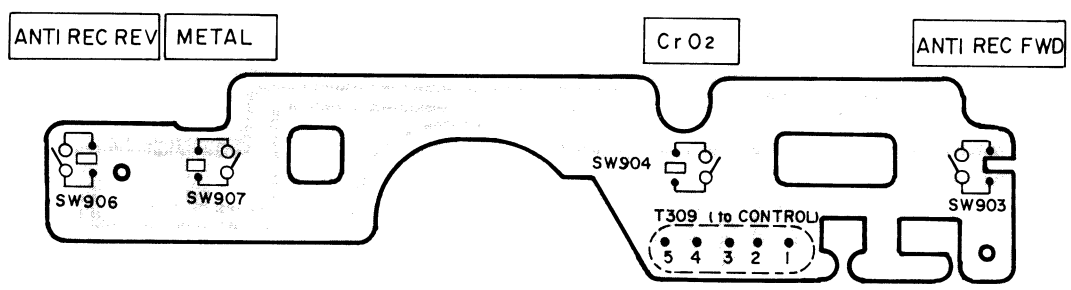
カムディレクション
基板
COM DIRECTION
PCB
CMR01C189B



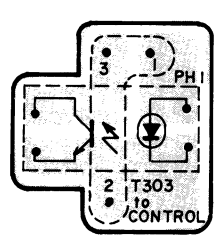
カムモーター
パルス基板
CAM MOTOR
PULSE PCB
CMR01C189C



ガイドディテクター基板
GUIDE DETECTOR
PCB CMR01D0220

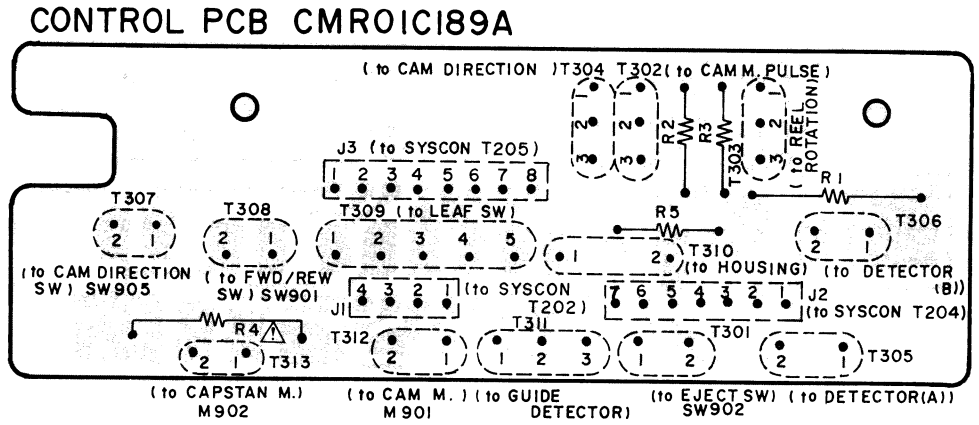


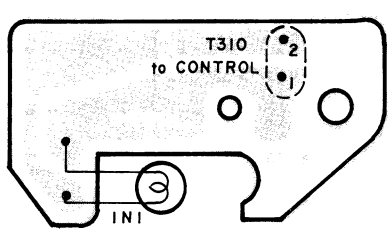
リーフスイッチ基板 CMR01C1490
LEAF SWITCH PCB



リールローテーション 基板
REEL ROTATION
PCB CMR01D1440

コントロール基板
CONTROL PCB CMR01C189A

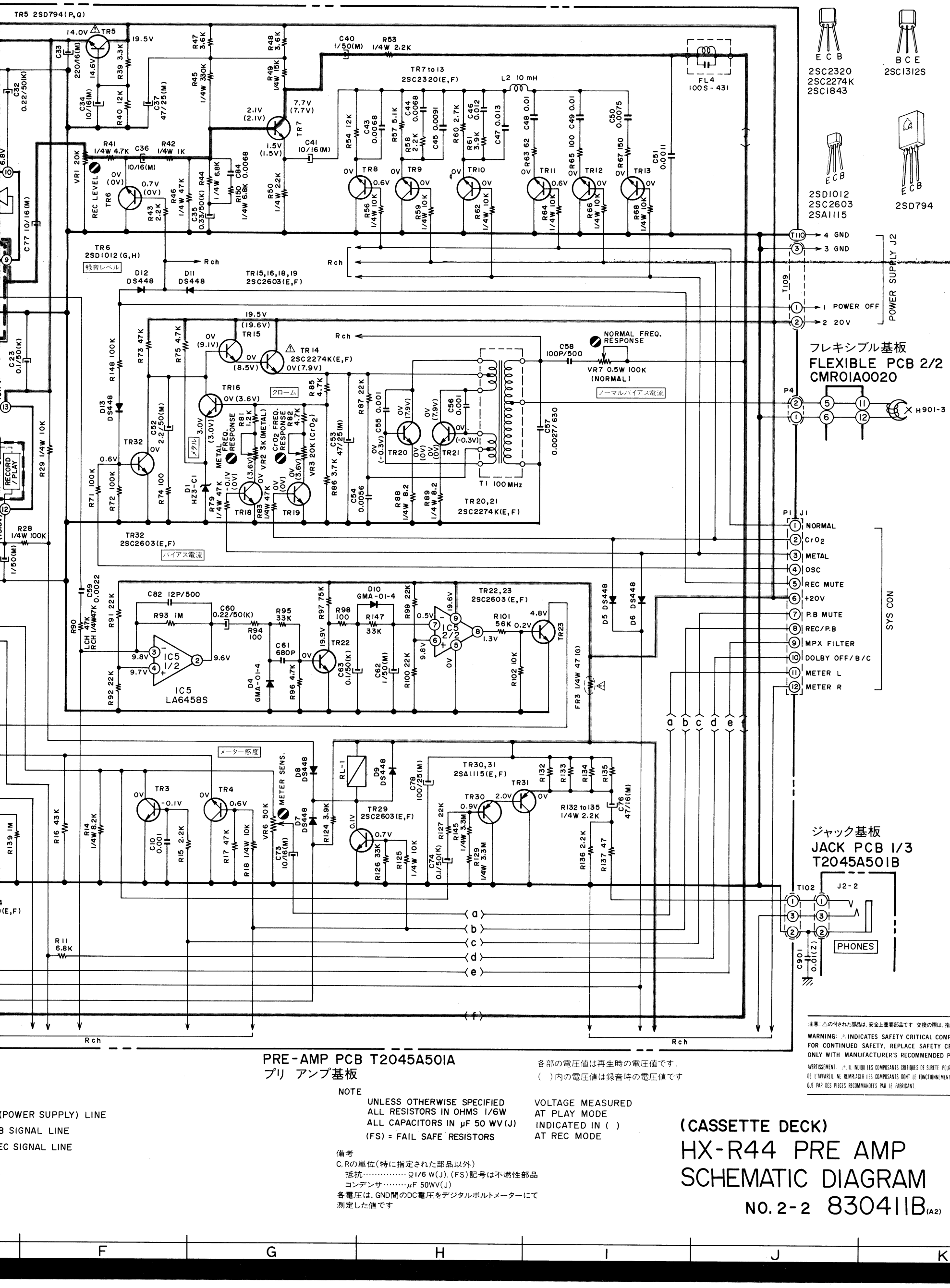




ハウジング基板
HOUSING PCB
CMR01D1430

HX-R44

ジャック基板
JACK PCB 2/3
T2045A501B



フレキシブル基板
FLEXIBLE PCB 2/2
CMR01A0020

ジャック基板
JACK PCB 1/3
T2045A501B

PRE-AMP PCB T2045A501A
プリ アンプ基板

各部の電圧値は再生時の電圧値です
( )内の電圧値は録音時の電圧値です

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W
ALL CAPACITORS IN μF 50 WV(J)
(FS) = FAIL SAFE RESISTORS

VOLTAGE MEASURED
AT PLAY MODE
INDICATED IN ( )
AT REC MODE

備考
C, Rの単位(特に指定された部品以外)
抵抗……Ω1/6 W(J), (FS)記号は不燃性部品
コンデンサ……μF 50WV(J)
各電圧は、GND間のDC電圧をデジタルボルトメーターにて測定した値です

(POWER SUPPLY) LINE
B SIGNAL LINE
EC SIGNAL LINE

注意: ⚠の付された部品は、安全上重要部品です 交換の際は、指定部品以外は使用しないこと

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS.
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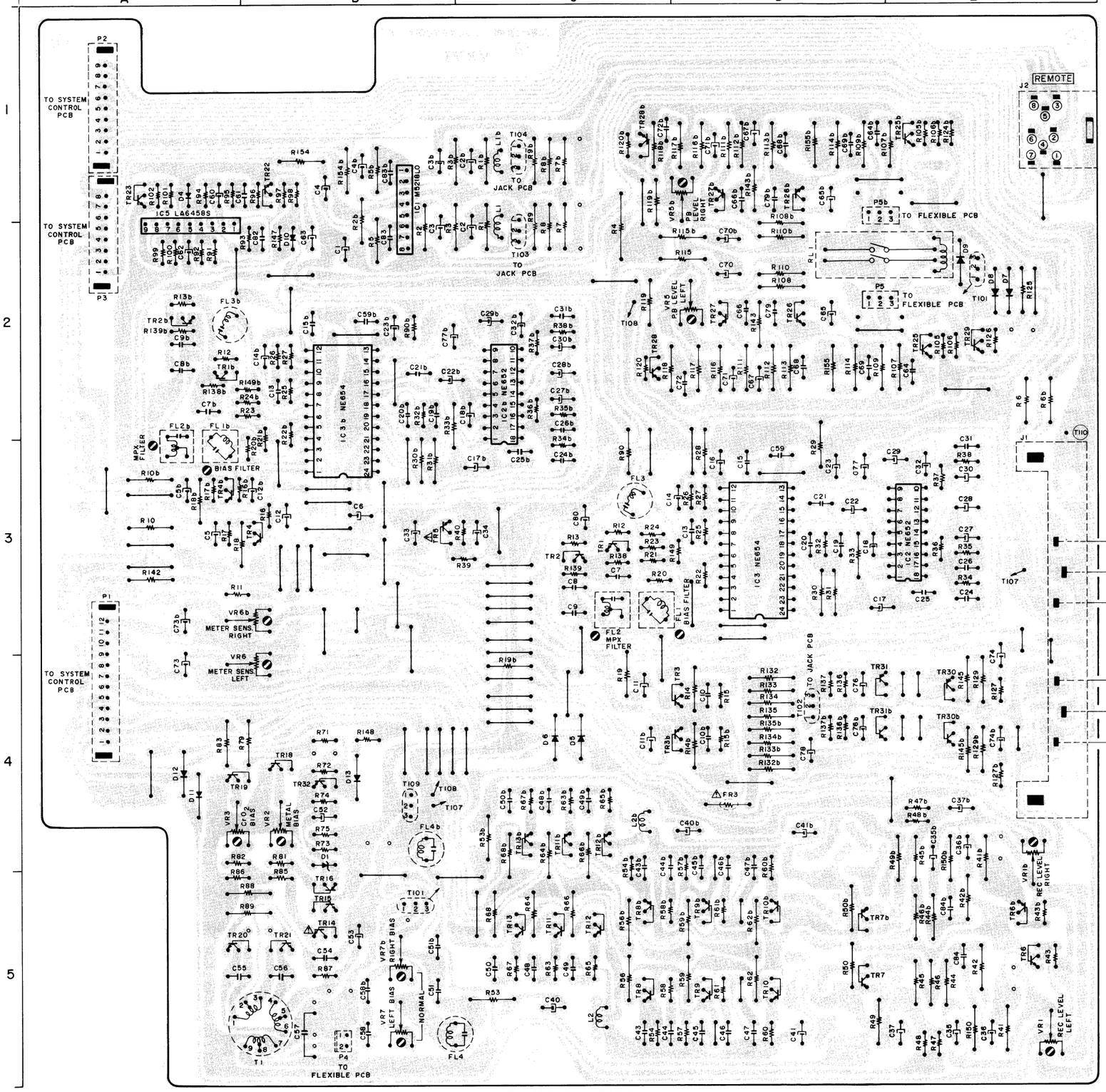
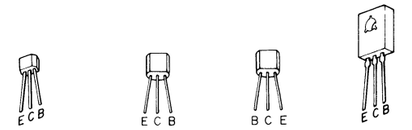
(CASSETTE DECK)
HX-R44 PRE AMP SCHEMATIC DIAGRAM
NO. 2-2 830411B(A2)



PRE-AMP PCB T2045A501A
プリ　アンプ基板



2SD1012(G,H)
2SC2603(E,F)
2SA1115(E,F)

2SC2320(E,F)
2SC2274K(E,F)
2SC1843(E,F)

2SC1312S(F,G)

2SD794(P,Q)

LOCATION OF COMPONENTS

TR

TR1,2.....C3
TR1b,2b.....A2
TR3,3b.....D4
TR4,5.....B3
TR4b.....A3
TR6,6b.....E5
TR7,7b.....D5
TR8,8b.....C5
TR9,9b,10,10b...D5
TR11to13.....C5
TR11bto13b.....C4
TR14to16.....B5
TR18.....B4
TR19.....A4
TR20.....A5
TR21.....B5
TR22.....B1
TR23.....A1
TR25.....E2
TR25b.....E1
TR26,27.....D2
TR26b,27b.....D1
TR28.....C2
TR29.....E2
TR30,30b.....E4
TR31,31b.....D4
TR32.....B4

IC

IC1.....B1
IC2.....E3
IC2b.....C2
IC3.....D3
IC3b.....B2
IC5.....A1

TERMINAL

P1.....A3
P2,3.....A1
P4.....B5
P5.....D2
P5b.....D1
J1.....E3
J2.....E1
T110 .....E2
T102.....D4
T103,104.....C1
T109.....B4
T101.....E2 to B5
T107.....E3 to B4
T108.....C2 to B4

TR 1 to 4, 8 to 13 ─ 2SC2320(E,F)
TR 7,25,28 ─
TR5 ──────── 2SD794(P,Q)
TR6 ──────── 2SD1012(G,H)
TR14,20,21 ──── 2SC2274K(E,F)
TR15,16,18,19 ─ 2SC2603(E,F)
TR22,23,29,32 ─
TR26 ──────── 2SC1843(E,F)
TR27 ──────── 2SC1312S(F,G)
TR30,31 ──────── 2SA1115(E,F)

注意 △の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないこと
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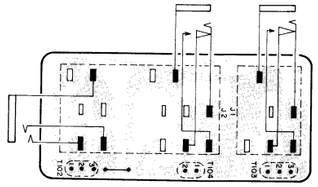
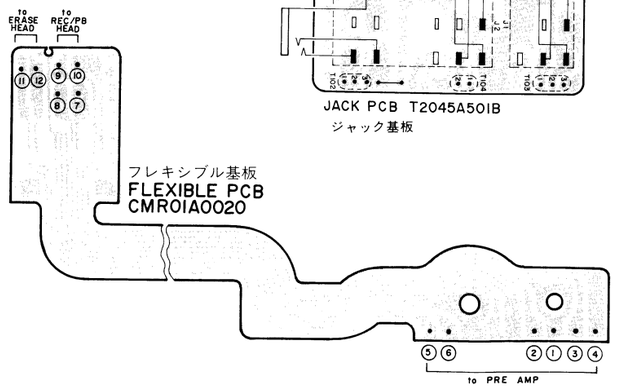
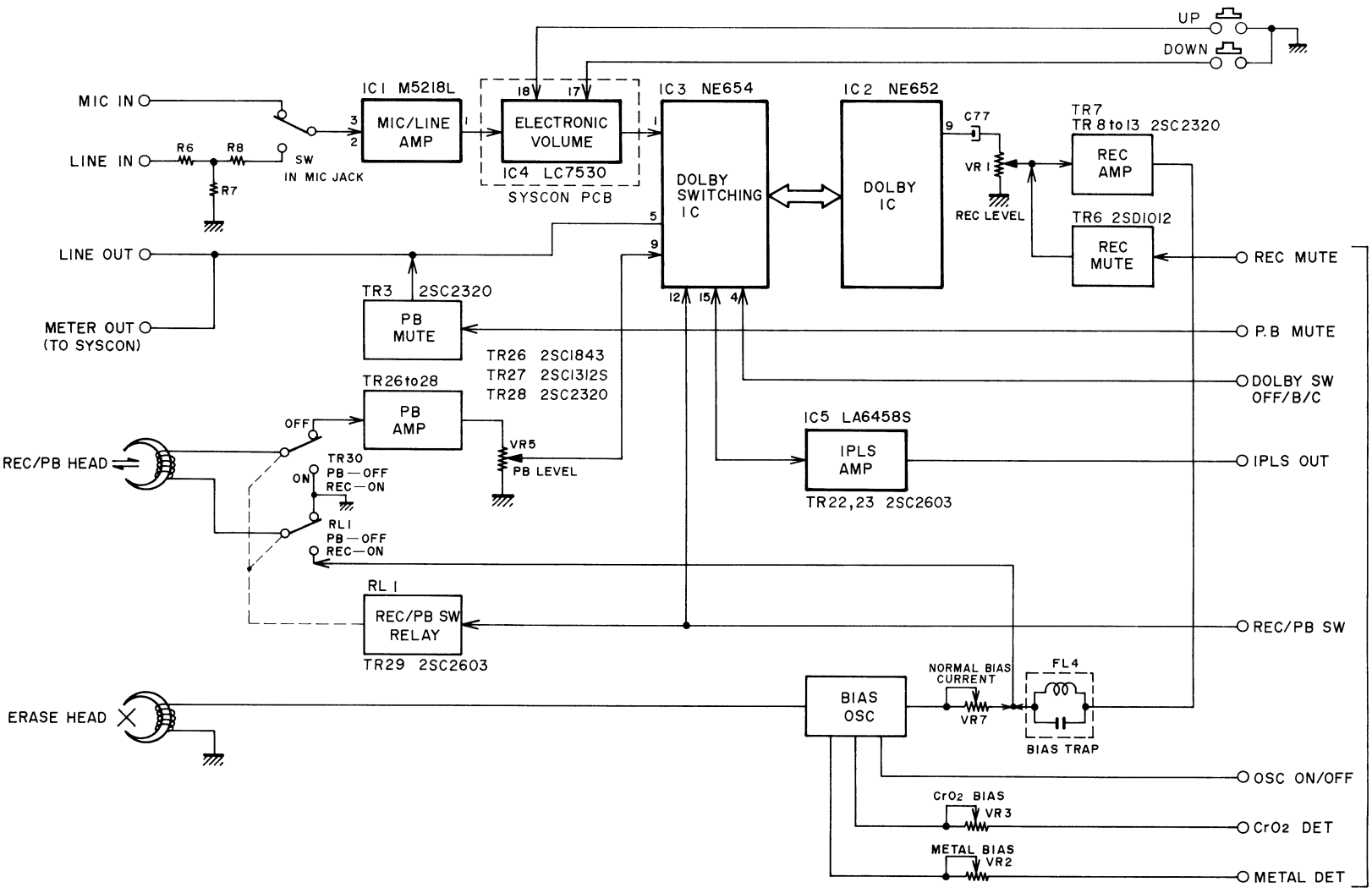


ジャック基板



フレキシブル基板
FLEXIBLE PCB
CMR01A0020

PRE AMPLIFIER BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM

AKAI

WERKSTATTHANDBUCH

Da dieses Wartungshandbuch bereits auf Englisch veröffentlicht ist und Einstell- und Zeichnungshinweise auf Deutsch enthält, empfiehlt es sich, diese Ausgabe des Handbuchs zusammen mit der bereits veröffentlichten englischen Ausgabe und den Stromlaufplänen zu verwenden.

STEREOCASSETTENDECK

MODEL HX-R44

I. TECHNISCHE DATEN

SPURSYSTEM	4-Spur 2-Kanal-Stereosystem
CASSETTE	Philips-Kompaktcassette
TONKÖPFE	1 Ein Loschkopf 1 Twin field super GX Kopf für Aufnahme und Wiedergabe
MOTOREN	1 elektronisch gesteuerter Gleichstrommotor für den Capstanantrieb 1 Gleichstrommotor für das Kurvenrad
GLEICHLAUFSCHWANKUNGEN	±0,07% W. Peak (EIAJ) 0,05% (W. PMS) 0,12% (DIN)
FREQUENZGANG	Normal: 20 bis 16.000Hz ±3dB (EIAJ) CrO_2: 20 bis 17.000Hz ±3dB (EIAJ) Reineisenband: 20 bis 18.000Hz ±3dB (EIAJ)
GERÄUSCHSPANNUNG	58dB 55dB (EIAJ) Dolby B ON: Verbesserung um bis zu 5dB bei 1kHz, 10dB über 5kHz Dolby C ON: Verbesserung um bis zu 15dB bei 500kHz, 20dB bei 1 kHz 10kHz
KLIRRFAKTOR	0,7% (Reineisenband) 0,6% (Reineisenband) 0,25% (CrO_2) 0,15% (Normal)
EINGANG	LINE: 410mV/47kOhm
AUSGANG	LINE: 410mV/ 1 kOhm
LEISTUNGSAUFNAHME	100V, 50/60Hz für Japan 120V, 60Hz für USA und Canada 220V, 50Hz für Europa außer GB 240V, 50Hz für GB und Australien 110V/120V/220V/240V, 50/60Hz umschaltbar für andere Länder
ABMESSUNGEN	440(B) x 105(H) x 288(T)mm (17,3 x 4,1 x 11,3 inches)
GEWICHT	4,5kg (9,9 lbs)

* Änderungen von technischen Daten und Design zwecks Verbesserung vorbehalten.

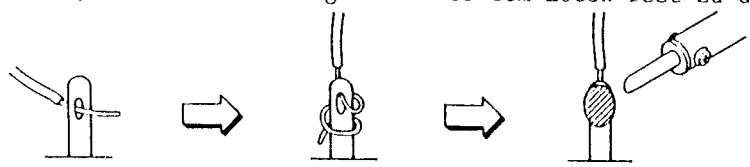
* Das Rauschunterdrückungs-System wird unter Lizenz von Dolby Laboratories Licensing Corporation gefertigt. "Dolby" und das Double-D-Zeichen sind Warenzeichen von Dolby Laboratories Licensing Corporation.

II. SICHERHEITSANWEISUNG

SICHERHEITSPRÜFUNG NACH DER REPARATUR
Überprüfen Sie, ob der Isolationswidersatand zwischen den Stiften des Netzsteckers sowie allen äußeren Teilen des Gerätes über 10 MOhm liegt. Bei Geräten mit Anschluß von Außenantenne (Tuner, Empfänger usw.), welche für |C| oder |A| bestimmt sind, muß der Isolationswiderstand über 2,2 MOhom liegen (Masse-Anschlüsse, Mikrofonbuchsen, Kopfhörerbuchsen, line-in/out-Buchsenusw.)

VORSICHTSMASSNAHMEN BEI DER REPARATUR

1. Die mit dem /!\ Symbol bezeichneten Teile sind ausschlaggebend für die Betriebssicherheit. Diese Teile nur gegen Original Ersatzteile austauschen.
2. Zusätzlich werden andere Teile entsprechend den Gesetzen zur Funkentstörung verwendet. Diese dürfen nur gegen die vorgeschriebenen Bauteile ausgetauscht werden.
   Beispiele: HF-Wandler, Tuner-Komponenten, Antennen-Wahlschalter, HF-Kabel, Entstörkondensatoren, Entstörfilter usw.
3. Nur die vorgeschriebene interne Verdrahtung verwenden. Hierbei besonders beachten:
   1) Mit PVC-Umhüllung versehene Leitungen.
   2) Doppelt isolierte Leitungen.
   3) Hochspannungsleitungen
4. Für gefährliche, stromführende Teile die vorgeschriebenen Isoliermaterialien verwenden. Hierbei besonders beachten:
   1) Isolierband
   2) PVC-Umhüllung
   3) Abstandshalter
   4) Isolierscheiben für Transistoren
   5) Plastikschrauben zum Anbringen von Mikroschaltern (speziell bei Plattenspielern)
5. Beim Austausch von Bauteilen auf der Primärseite (Transformatoren, Netzkabel, Entstör Kondensatoren usw.) Sind die Leitungsenden vor dem Löten fest zu umwickeln.



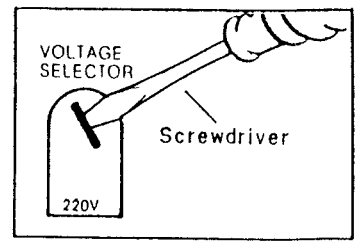
6. Es ist darauf zu achten, daß Leitungen nicht in Kontakt mit Wärme erzeugenden Teilen kommen (Kühlkörper, Oxidmetallschichtwiderstände, Sicherungswiderstände usw.
7. Überprüfen, dass die ausgetauschten Leitungen nicht in Kontakt mit scharfen Kanten oder spitzen Teilen kommen.
8. Desgl. sind die Bereiche in der Umgebung von Stellen, an denen repariert wurde, zu überprüfen.
9. Darauf achten, daß keine Fremdkörper (Schrauben, Lot, usw.) im Gerät verbleiben.

III. GERÄT VERBLEIBEN

3-1 WAHL DER SPANNUNG

Die Geräte für Kanada, USA, Europa, GB und Australien sind nicht mit dieser Funktion ausgestattet. Jedes Gerät ist ab Werk dem Bestimmungsland entsprechend eingestellt; einige Geräte können jedoch nach Bedarf auf 110V, 120V, 220V oder 240V eingestellt werden. Im Falle, daß die Spannung des Gerätes einstellbar ist:

1. Vor dem Auschluß des Netzkabels den an der Rückseite befindlichen.
2. Spannungswähler (VOLTAGE SELECTOR) mit einem Schraubenzieher drehen, so daß die korrekte Spannung angezeigt wird.



V. MECHANISCHE EINSTELLUNG

5-1 MESSEN DES ANDRUCKROLLENDRUCKS (siehe Abbildung 5-1)

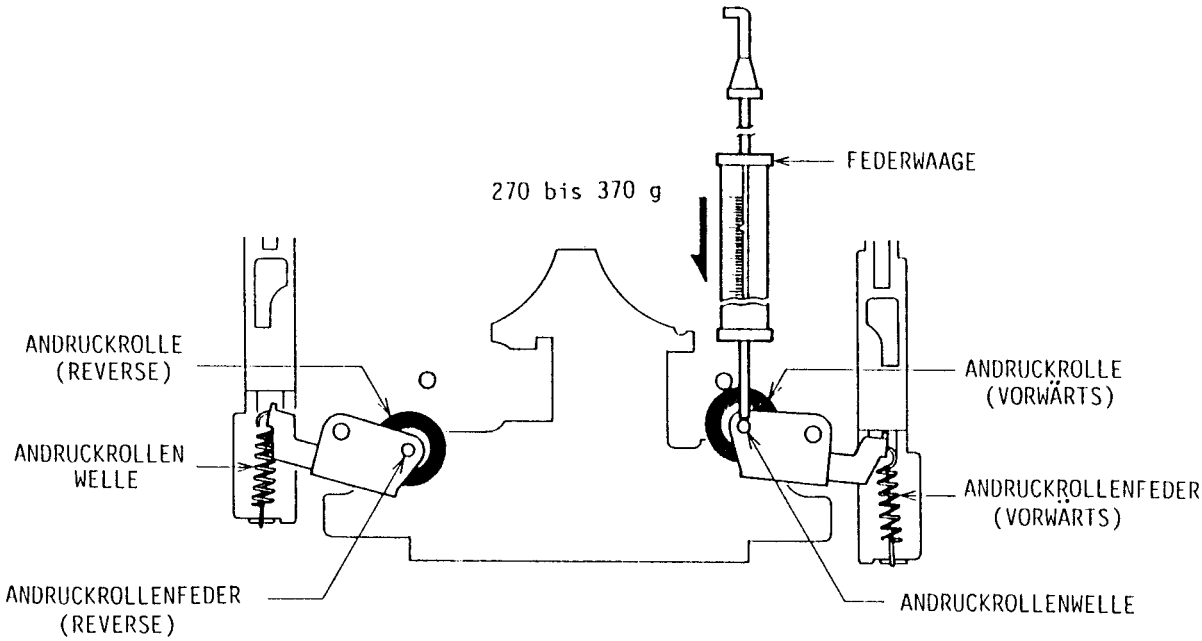


Abb. 5-1

Das Gerät auf FWD PLAY schalten. Die Andruckrollenwelle mit der Federwaage so herunterdrücken, daß ein Abstand von 1-2 mm Zwischen Andruckrolle und Capstan entsteht.
Anschließend den Druck vermindern, bis sich die Andruckrolle wieder zu drehen beginnt. In diesem Zustand den Wert ablesen. Der vorgeschriebene Andruck beträgt 270 bis 370 g.
Fall dieser Wert nicht erreicht wird, ist die Andruckrollenfeder auszutauschen.
Die gleiche Verfahrensweise für die Reverseseite anwenden.

5-2 WICKEL-DREHMOMENT-MESSUNGEN IN ALLEN BETRIEBSARTEN (siehe Abbildung 5-2)

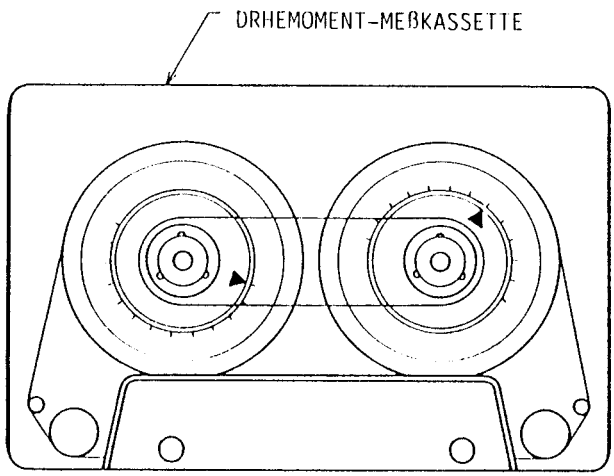


Abb. 5-2

Eine Drehmoment-Meßkassette (AJ-751179) einlegen und die Messung in allen Betriebsarten durchführen.
Für schnellen Vor- und Rücklauf führt man die Messung nach Stoppen des Bandlauf am Bandende durch.
Vorwärts- oder Reverse-Betriebsart
Aufwickelzug: 25 bis 45 g-cm
Abwickelzug: 2 bis 5 g-cm
Schnellvorlauf- oder Rückspul-Betriebsart
Aufwickel: 70 bis 150 g-cm

5-3 EINSTELLUNG DER BANDGESCHWINDIGKEIT (siehe Abbildung 5-3)

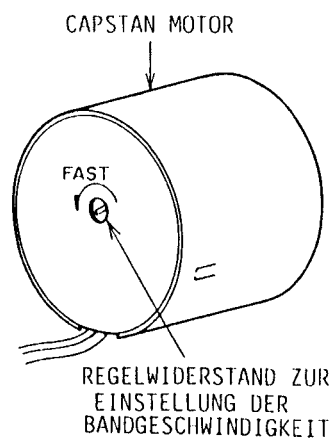


Abb. 5-3 Position des Regelwiderstandes zur Einstellung der Bandgeschwindigkeit

Einen Frequenzzähler an den Line-Ausgang anschließen. Eine mit einem 1000Hz-Signal bespielte Testcassette (AT7750744) oder eine mit 3150Hz bespielte Testcasette (AT-751263) wiedergeben und den Regelwiderstand zur Einstellung der Bandgeschwindigkeit so einstellen (siehe Abb. 5-3), daß eine Frequenz von 1000 ± 3 Hz bzw. 3150 ± 10Hz erzielt wird.

VI. ZUR TONKOPFEINSTELLUNG

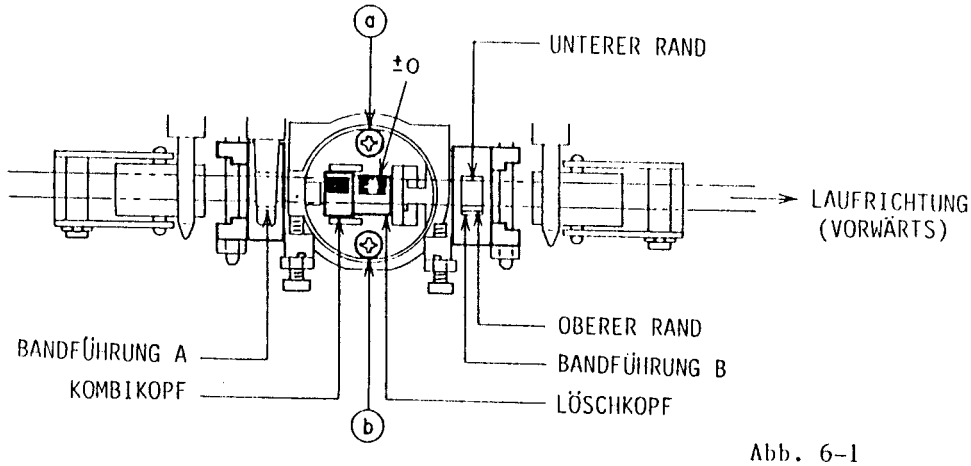


Abb. 6-1

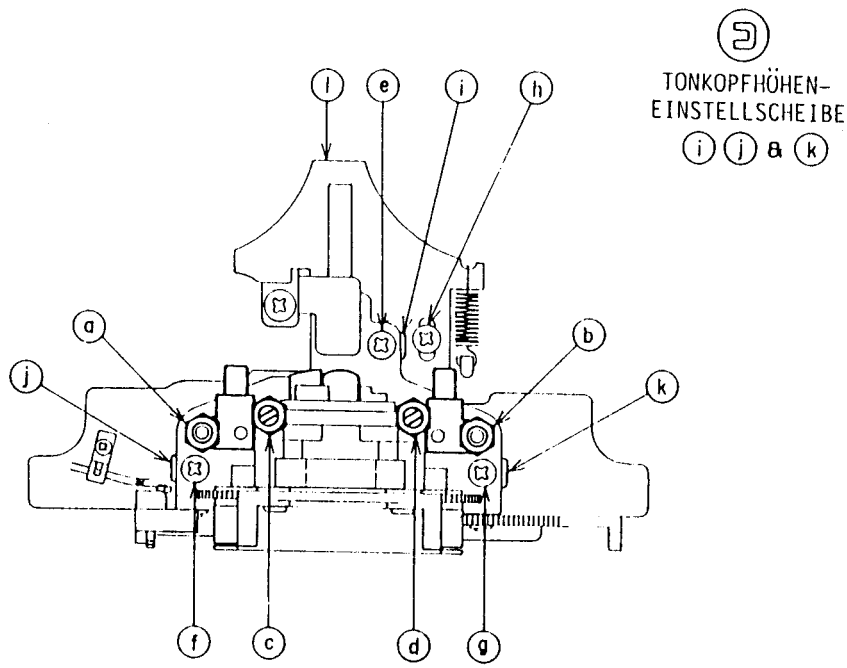


Abb. 6-2

Abb. 6-3 Tonkopfvorsprung-Messgerät (TF-111CJ)

Abb. 6-4 Spiegelcassette (MC-112C)

6-1 BANDFÜHRUNGS-EINSTELLUNG (Siehe Abbildung 6-1 und 6-4)

1) Wie in Abbildung 6-3 gezeigt, eine Spiegelkassette (AT-751178) verwenden, um den Tonkopfbereich besser einsehen zu können und das Gerät auf Wiedergabe schalten.

2) Die Bandführungen Ⓐ + Ⓑ sind mit Hilfe der beiden Einstellmuttern ⓐ + ⓑ, wie in Abb. 6-2 gezeigt, so einzustellen, daß das Band glatt über den unteren Rand beider Bandführungen läuft und keinerlei Verformungen aufweist.

6-2 KOMBIKOPF-AZIMUTH-EINSTELLUNG

Eine 10kHz-Tonkopf-Azimuth-Einstellkassette (AT-750778) wiedergeben und die Schrauben Ⓒ (FWD-Riechtung) und ⓓ (REV-Richtung) so einstellen, daß die Pegel beider Kanäle Maximum sind. (HINWEIS: Die schrauben nicht zu weit drehen, da andere (falsche) Maximalwerte weiter entfernt auf beiden Seiten der korrekten Positionen auftreten.

6-3 EINSTELLUNG DER TONKOPFHÖHE

Diese Einstellung ist nicht erforderlich, da das GX-R66 mit einem rotierenden Kopfsystem (mit Löschkopf REC/PB-Kombikopf) ausgestattet ist. Eine Überprüfung auf korrekte Kopfhöhe ist jedoch erforderlich und wird wie folgt ausgeführt.

1) Zunächst wie im Abschnitt 6-2 beschrieben, den Azimuth überprüfen.
2) Eine 315Hz (oder 333Hz) Wiedergabepegel-Abgleichcassette (AT-750773) in der FWD Wiedergabe-Betriebsart abspielen und den Wiedergabepegel-Einstellwiderstand (VR5 auf der Vorverstärker-Leiterplatte) so einstellen, daß der LINE OUT Pegel des linken Kanals -5,5dBm beträgt. Danach den pegel des gleichen Kanals in der REV-Betriebsart überprüfen. Die Pegeldifferenz zwischen den Betriebsarten FWD und REV sollte innerhalb ± 1dBm liegen (-4,5dBm bis -6,5dBm).
3) Wenn im obigen Abschnitt 2 die Differenz mehr als ± 1dBm beträgt, nimmt man die Einstellung der Bandführungen A und B durch Drehen der Bandführungshöhen-Einstellschrauben (a) und (b) vor, die man in der gleichen Richtung um jeweils 1/4 Umdrehungen (±0,1 mm) dreht, so daß die Differenz innerhalb ±1dBm liegt.
4) Wenn die Differenz durch die obige Einstellung sich nicht korrigieren läßt, ist eine Einstellung der Kopfhöhe erforderlich. Diese Kann durch Veränderung der kopfhöhen-Einstellscheiben ⓘ, ⓙ und ⓚ vorgenommen werden. (Die Dicke dieser Scheiben ist ⓘ = 0,45 mm, ⓙ und ⓚ = 0,3 mm). Für den Scheibenaustausch die Schrauben ⓔ, ⓕ und ⓖ lösen.
Wenn der Pegel in der REV-Betriebsart niedriger ist, bedeutet dies, daß der Kopf zu hoch ist, daher sind in diesem Falle die Unterlegscheiben gegen dünnere auszutauschen. Wenn der Pegel in de REV-Betriebsart höher ist, nimmt ma den Austausch gegen dickere vor.
Nach dem Austausch der Unterlegscheiben nimmt man die gleiche Einstellung wie im Abschnitt 1 vor und stellt sicher, daß der LINE OUT Pegel -5,5dBm ± 1dBm beträgt.
Zur wietern Kontrolle ist ein 4-Spur-Kopfhöhen-Einstellband (1kHz/4-Spur AT-750775) abzuspielen. Der Line Ausgangspegel beider Kanäle sollte mehr als -8dBm betragen und die Differenz im Pegel zwischen den Betriebsarten FWD und REV sollte innerhalb ±1dBm liegen. Anderenfalls ist ein Feinabgleich in der gleichen Weise wie in den Abschnitten 3 und 4 auszuführen.
5) Ein evtl. erforderlicher Kopfaustausch wird leicht gemacht, indem man nur die Schrauben (a) und (b) in Abbildung 6-1 löst.

6-4 KOPFBLOCKVORSPRUNG-EINSTELLUNG (siehe Abb. 6-2 und 6-3)

Eine Tonkopfvorsprung-Messcassette (AT-751180) verwenden und die Betribsart FWD oder REV Wiedergabe wählen.
Die Schraube (h) lösen und das Kopfträger-Chassis so einstellen, daß das Meßgerät 3,4 ± 0,15 mm anzeigt.
Nach der Einstellung die Schraube (h) mit Siegellack sichern.

VII. ELEKTRISCHER ABGLEICH

7-1 ABGLEICH DER QUICK-REVERSE-EMPFINDLICHKEIT

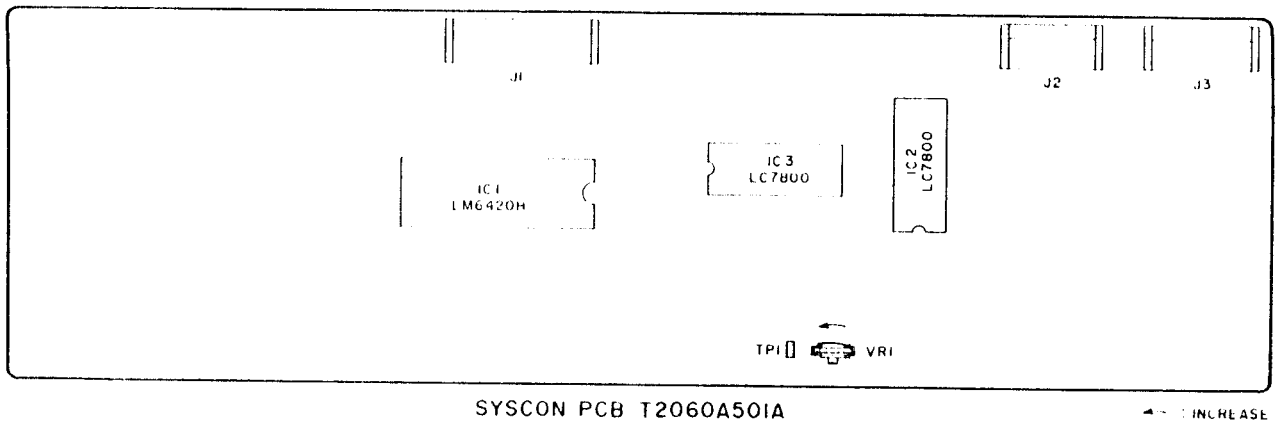


Abb. 7-1 HX-R44 Abgleich reverse-Empfindlichkeit

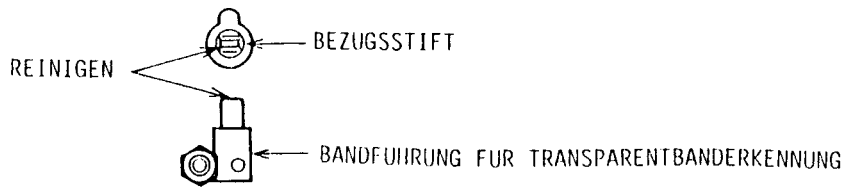


Abb. 7-2

1) Durch Entanahme des Bandes aus einer weißen Testcassette eine bandlose Cassette herstellen.
2) EinDigitalvoltmeter zwischen TP-1 und Masse anschließen.
3) Unter Verwendung der bandlosen Cassette den Regelwiderstan VR1 so abgleichen, daß das Digitalvoltmeter in der FWD Widergabe 14V ± 0,5V Gleichspannung anzeigt.
4) Werden die erwähnten 14V nicht erreicht, ist der Widerstand R18 (150k ohm) auf der Systemsteuer-Leiterplatte auszubauen und der Regelwiderstand VR1 nochmals in der gleichen Weise wie im Abschnitt abzugleichen.

HINWEIS: Vor diesem Abgleich den Bezugsstift und die Bandführung für Transparentbanderkennung reinigen (siehe Abb. 7-2)

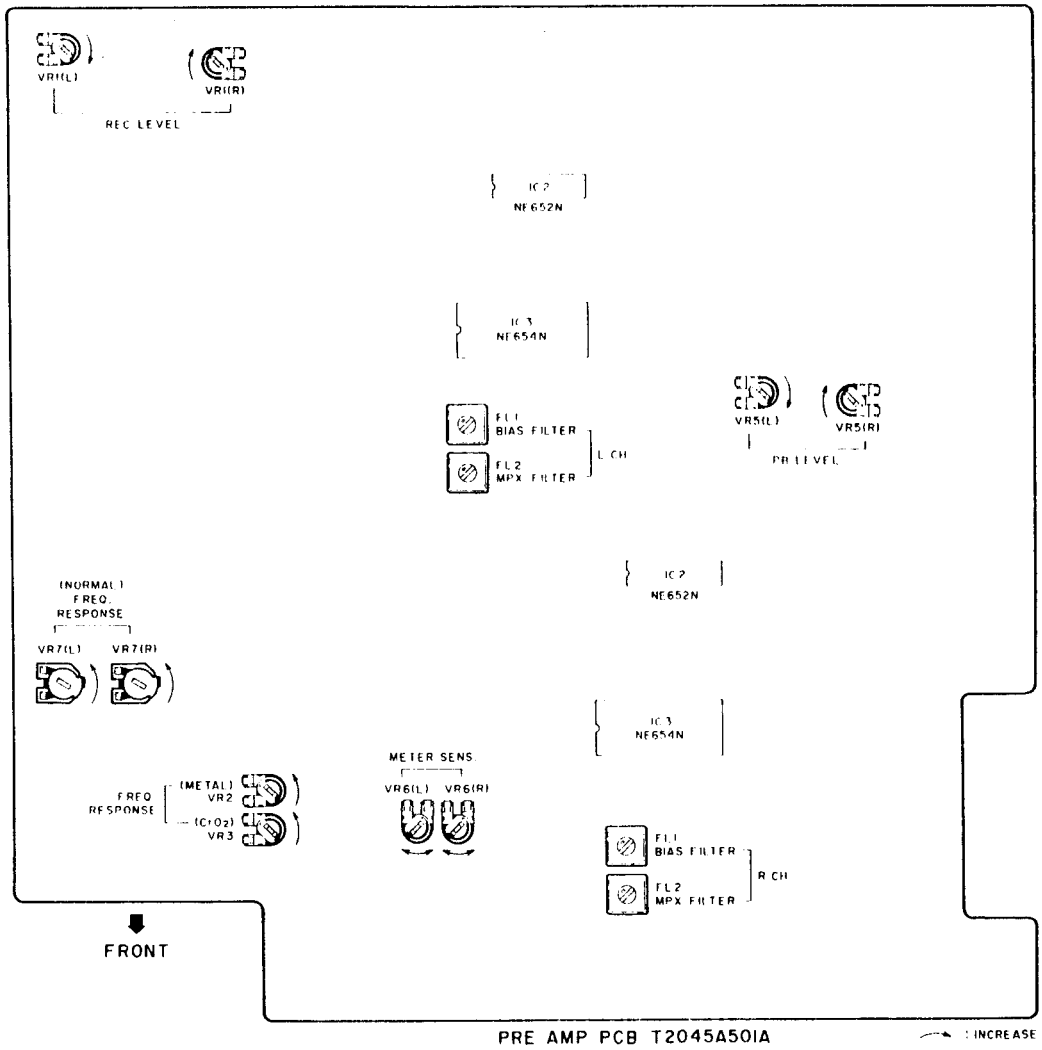


Abb. 7-3 HX-R44 Abgleichpunkte an der Vorverstärker-Leiterplatte

Schritt	Abgleichgegenstand	Testcassette und angelegtes signal	Betriebsart	Abgleichteil	Ergebnis	Bemerkungen
1	FWD PB Pegel	333Hz (AT-750773) oder 315Hz (AT-750773)	FWD PB	VR5	-6,1 ± 0,2dBm oder -5,5 ± 0,2dBm	
2	REV PB Pegel	333Hz (AT-750773) oder 315Hz (AT-750773)	REV PB		-6,1 ± 0,2dBm oder -5,5 ± 0,2dBm	Prüfung
3	Frequenzgang Normalposition	Normal-Leercassette 1kHz, 10kHz -25,5dBm	REC/PB	VR7	1kHz, 10kHz Linear ± 0,3dB	
4	Frequenzgang CrO_2-Position	CrO_2-Leercassette 1kHz, 10kHz-25,5dBm	REC/PB	VR3	1kHz, 10kHz Linear ± 0,8dB	
5	Frequenzgang Reineisenband-Position	Reineisenband-Leercassette 1kHz, 10kHz -25,5dBm	REC/PB	VR2	1kHz, 10kHz Linear ± 0.8dBm	
6	REC Pegel	Normalband-Leercassette 1kHz, -5,5dBm	REC/PB	VR1	-5,5 ± 0,5dBm	
7	Vormagnetisierungsfilter	Kein Signaleingang	REC	FL1	Minimumausgang	Aussteuerungsregler auf Maximum stellen
8	Anzeige empfindlichkeit	1kHz Eingang	REC PAUSE	VR6	Ovu Anzeige bei Line Ausgang -5,9 ± 0,2dBm	Zu diesem Zeitpunkt den Line Ausgangspegel um 0,1dB senken und Prüfen, daß die Ovu Anzeige erlischt.
9	MPX-Filter	19kHz vom Oszillator	REC	FL2	Minimumausgang	MPX-Filterschalter "ON"

HINWEIS:
1. Alle obigen Einstellungen außer für Schritt 5, 10 und 12 gelten für die FWD-Betriebsart; diese Einstellungen sind im REV-Betrieb nicht erforderlich, aber die Prüfung jedes Schritts in der REV-Betriebsart sollte ausgeführt werden.
2. Obiger Abgleich, außer für Schritt 12, nur mit ausgeschalteter Dolby-Rauschunterdruckung ausführen.
3. Zum Adgleich nur folgende Bänder verwenden:
   Normalband: Maxell UD C-60
   CrO_2 Band: TDK SA C-60
   Reineisenband: TDK MA C-60
4. Für weitere Einstellungen siehe Abbildung 7-3.